

DOCUMENT RESUME

ED 060 478

CG 006 952

TITLE Interface on Learning: Developing Behavioral Objectives.
INSTITUTION Ohio Education Association, Columbus.
PUB DATE [70]
NOTE 53p.
AVAILABLE FROM Ohio Education Association, Columbus, Ohio (single copy -- \$1.00, 2-9 copies -- \$0.90 each, 10-100 copies -- \$0.70 each, over 100 copies -- \$0.50 each)

EDRS PRICE MF-\$0.65 HC-\$3.29
DESCRIPTORS *Behavioral Objectives; *Course Objectives; Criterion Referenced Tests; *Evaluation Criteria; *Performance Specifications; *Student Behavior

ABSTRACT

This booklet was developed in response to Ohio Education Association members' concern in developing behavioral objectives. It characterizes well-formulated behavioral objectives as: (1) stated in precise language that clearly defines the behavior; (2) establishing a performance or behavior expectancy level; (3) describing the conditions under which the behavior is to be observed, tested, or judged; and (4) containing performance standards that can be applied in determining whether or not the student can act, perform, or behave at an established level of proficiency. Also included are articles comprising sections on (1) Behavioral Objectives: A Close Look; (2) The Instructional Objectives Exchange: New Support for Criterion-Referenced Instruction; (3) The Behaviorally Oriented School; (4) A Place for Behavioral Objectives in American Education; (5) Potential Uses of Instructional Objectives Exchange; (6) Probing the Validity of Arguments Against Behavioral Goals; and (7) Operational Objectives and In-Service Education.
(TA)

CG
N-NP0

ED 060478

OEA-Instructional Services Division



Developing Behavioral Objectives

Another Service for You From the Ohio Education Association

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRO-
DUCED EXACTLY AS RECEIVED FROM
THE PERSON OR ORGANIZATION ORIG-
INATING IT. POINTS OF VIEW OR OPIN-
IONS STATED DO NOT NECESSARILY
REPRESENT OFFICIAL OFFICE OF EDU-
CATION POSITION OR POLICY.

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGES</u>
Foreword	
Overview of Behavioral Objectives	1-16
Behavioral Objectives: A Close Look	17-19
The Instructional Objectives Exchange: New Support for Criterion-Referenced Instruction	20-21
The Behaviorally Oriented School	22
A Place for Behavioral Objectives In American Education .	23-25
Potential Uses of Instructional Objectives Exchange . . .	26-34
Probing the Validity of Arguments Against Behavioral Goals	35-42
Operational Objectives and In-Service Education	43-47
Selected Bibliography	48-50

Additional Information

This booklet was printed by the OEA-Printing and Mailing Division. Single copies are free to OEA members. Non-OEA-members will be charged \$1.00 per copy. Quantity orders are available at the following discounts: 2-9 copies--90 cents each; 10-100 copies--70 cents each; and over 100 copies--50 cents each. The OEA will pay shipping charges on cash orders, but orders not accompanied by cash will be billed with shipping charges added.

FOREWORD

We defined behavioral objectives as intentions, expectancies, aims, or goals that lead us to behave, act, or perform in a certain way. Such objectives are not important just because they are couched in behavioral terms but rather because they help to make more precise, rational, and effective the planning of educational programs; the processes used in improving the behavior of students and teachers; and the means employed to evaluate the effect of the school upon the lives of children.

Characteristics of well-formulated behavioral objectives are:

1. They are stated in precise language that clearly defines the behavior.
2. They establish a performance or behavior expectancy level.
3. They describe the conditions under which the behavior will be observed, tested, or judged.
4. They contain performance standards or criteria that will be applied in determining whether or not the student can act, perform, or behave at an established level of proficiency.

The following materials have been compiled from various sources by the Instructional Services Division of the Ohio Education Association in an attempt to answer some of our membership's concern in developing Behavioral Objectives.

Edward F. Jirik, Ph.D.
Director of Instructional Services

OVERVIEW OF BEHAVIORAL OBJECTIVES

BACKGROUND:

THE MOST IMPORTANT THING A TEACHER CAN DO IS TO MODIFY BEHAVIOR IN A POSITIVE DIRECTION. HE CAN DO THIS BY DEFINING, TEACHING TO, AND EVALUATING PUPIL PROGRESS AND INSTRUCTION IN LIGHT OF BEHAVIORAL OBJECTIVES. HE CAN DO THIS BY PROVIDING EXPERIENCES THAT FOSTER MEASURABLE IMPROVEMENT IN SKILLS AND BEHAVIOR.

TO ACHIEVE SOME FEELING AND KNOWLEDGE OF SUCCESS IN TEACHING, WE NEED TO FORMULATE BEHAVIORAL EXPECTANCIES, ESTABLISH MEASURABLE STANDARDS OF EXCELLENCE, AND DEVISE OR ADOPT PROCEDURES THAT WILL SHOW BOTH BEHAVIORAL CHANGE IN STUDENTS AND OUR SUCCESS AS TEACHERS. THESE, THEN, ARE OUR PURPOSES. WE CAN NOW ATTEND TO PRACTICAL IDEAS FOR OUR BECOMING MORE COMPETENT PROFESSIONAL EDUCATORS AND MORE EFFECTIVE HUMAN BEINGS.

PERFORMANCE (BEHAVIOR) IS IMPORTANT WHETHER IT IS OF A YOUNG MAN PROVING HIS ADULTHOOD IN A PRIMITIVE CULTURE BY STALKING, KILLING, AND BRINGING HOME A WILD ANIMAL WHETHER IT IS OF A YOUTH IN OUR OWN CULTURE EARNING CERTAIN GRADES OR MERIT BADGES; OR WHETHER IT IS OF AN AMERICAN ADULT MEETING PERFORMANCE DEMANDS AND EXPECTANCIES IN OUR ECONOMIC AND SOCIAL SYSTEM.

WHAT ARE BEHAVIORAL OBJECTIVES

BEHAVIORAL OBJECTIVES ARE INTENTIONS, EXPECTANCIES, AIMS, OR GOALS THAT LEAD OR DIRECT US TO BEHAVE, ACT, OR PERFORM IN A CERTAIN WAY. AS SUCH, THEY ARE USEFUL TOOLS IN DIRECTING, GUIDING, AND IMPROVING BOTH TEACHING AND LEARNING. TO BE OF OPTIMUM VALUE, THEY NOT ONLY SHOULD DESCRIBE THE BEHAVIOR SOUGHT AND THE LEVEL OF PERFORMANCE ANTICIPATED, BUT THEY SHOULD ALSO CONTAIN STANDARDS OR CRITERIA FOR DETERMINING WHETHER THE LEVEL OF PERFORMANCE HAD BEEN REACHED.

WHAT ARE BEHAVIORAL OBJECTIVES?

BEHAVIORAL OBJECTIVES ARE --

INTENTIONS, EXPECTANCIES, AIMS,
OR GOALS

THAT LEAD OR DIRECT US TO --
BEHAVE, ACT, OR PERFORM IN A
CERTAIN WAY.

BEHAVIORAL OBJECTIVES ARE --

USEFUL TOOLS IN DIRECTING, GUIDING,
AND IMPROVING
BOTH TEACHING AND LEARNING.



WHY SHOULD TEACHERS BE ABLE TO FORMULATE BEHAVIORAL OBJECTIVES?

WHY SHOULD TEACHERS BE FAMILIAR WITH AND USE THIS TYPE OF OBJECTIVES IN PLANNING CURRICULUM, LESSON PLANS, AND ASSIGNMENTS, OR IN EVALUATING SUCCESS OR LACK OF SUCCESS OF THE INSTRUCTIONAL PROGRAM AND OF THE ACHIEVEMENT OF BOYS AND GIRLS?

TEACHERS SHOULD BE ABLE TO PREPARE BEHAVIORAL OBJECTIVES BECAUSE THIS ABILITY CAN EFFECT MARKED IMPROVEMENT IN:

1. SKILLS THAT DISTINGUISH MASTER FROM MEDIOCRE TEACHING
2. EXPERIENCES OF CHILDREN
3. THE HOLDING POWER AND SUCCESS OF THE INSTRUCTIONAL PROGRAM

WITH SUCH OBJECTIVES--WITH THEIR CLEARLY ESTABLISHED MEASURABLE LEVELS OF PERFORMANCE--WE CANNOT DETERMINE WHETHER GENERAL EDUCATIONAL GOALS, COURSE OBJECTIVES, OR ASSIGNMENT OBJECTIVES HAVE BEEN REACHED. LIKEWISE, WITHOUT CLEAR, SPECIFIC OBJECTIVES AND PROCEDURES FOR EVALUATING WHETHER OR NOT A CHILD HAS REACHED THESE OBJECTIVES, IT IS DIFFICULT TO ESTABLISH THE CONDITIONS (MATERIALS, TEACHER METHODOLOGY, ENVIRONMENT, AND ASSIGNMENTS) THAT ARE NECESSARY FOR HELPING STUDENTS (1) MEET THE GENERAL OBJECTIVES OF THE CLASS OR COURSE, AND (2) GAIN A FEELING OF REALLY HAVING ACHIEVED OR DEVELOPED, FOR EXAMPLE, LEVEL A PROFICIENCY OF SKILL OR UNDERSTANDING TO LEVELS B OR Z.

THUS, FORMULATION OF BEHAVIORAL OR PERFORMANCE OBJECTIVES BECOMES AN IMPORTANT STEP IN:

CURRICULUM DEVELOPMENT

COURSE, UNIT AND LESSON PLANNING

SELECTING INSTRUCTIONAL MATERIALS

DECIDING WHAT TEACHING METHODS OR STRATEGIES TO EMPLOY WITH CERTAIN STUDENTS OR WITH CERTAIN GROUPS OR CLASSES OF STUDENTS.

VALUE OF BEHAVIORAL OBJECTIVES?

TO BE OF OPTIMUM VALUE--

THEY NOT ONLY SHOULD DESCRIBE THE
BEHAVIOR SOUGHT AND THE LEVEL
OF PERFORMANCE ANTICIPATED.

BUT, THEY SHOULD ALSO CONTAIN
STANDARDS OR CRITERIA FOR
DETERMINING WHETHER THE LEVEL
OF PERFORMANCE HAS BEEN REACHED.



PREPARING OR SELECTING TESTS THAT ARE RELEVANT TO THE OBJECTIVES OF INSTRUCTION AND THAT DO MEASURE PROGRESS IN TERMS OF MEASURABLE GROWTH OR IMPROVEMENT IN CERTAIN TASKS OR SKILLS.

ROBERT F. MEAGER EMPHASIZES SOME OF THESE SAME POINTS IN HIS USEFUL PAPERBACK BOOK, PREPARING INSTRUCTIONAL OBJECTIVES.¹ HE ASSERTS, "... AN INSTRUCTOR WILL FUNCTION IN A FOG OF HIS OWN MAKING UNTIL HE KNOWS JUST WHAT HE WANTS HIS STUDENTS TO BE ABLE TO DO AT THE END OF THE INSTRUCTION." HE ALSO MAKES A VALID POINT IN DISTINGUISHING BETWEEN COURSE DESCRIPTIONS (WHAT A COURSE IS ABOUT) AND COURSE OBJECTIVES (WHAT STUDENTS SHOULD BE ABLE TO DO AFTER COMPLETING THE COURSE). IF WE ARE NOT CAREFUL, WE CAN TALK ON AND ON ABOUT THE GENERAL AIMS AND CONTENT OF A COURSE WITHOUT EVER INDICATING WHAT IS IT THAT THE TEACHER AND PUPIL WILL DO AND HOW THE COURSE WILL RESULT IN ANY MEASURABLE BENEFIT, PROGRESS, OR IMPROVEMENT IN PUPIL BEHAVIOR.

BEHAVIORAL OBJECTIVES AND TEACHER SUCCESS

SUCCESSFUL TEACHERS TEND TO BE THOSE THAT ARE KNOWLEDGEABLE, WELL ORGANIZED, AND FLEXIBLE. THEY TEND TO UNDERSTAND THE CAPABILITIES AND NEEDS OF PUPILS, TO BE ENTHUSIASTIC, AND TO HAVE A SENSE OF HUMOR. THEY TEND TO BE RESOURCEFUL AND CREATIVE IN TEACHING METHODS AND IN EXPERIENCES PLANNED.

STATEMENTS OF EDUCATIONAL OBJECTIVES: STRENGTHS AND WEAKNESSES

EDUCATIONAL OBJECTIVES GUIDE WHAT THE TEACHER DOES AND INFLUENCES WHAT STUDENTS WILL BECOME. THEY DIRECT THE ACTIVITIES OF BOTH. THEY SHOULD BE SPECIFIC ENOUGH TO USE AS A CRITERION BASE FOR EVALUATING EDUCATIONAL PRACTICES. BUT ARE THEY? TYPICALLY THEY ARE NEITHER SUITABLE AS PRACTICAL GUIDELINES NOR AS EVALUATION CRITERIA. TO THE DISMAY OF TEACHER AND ADMINISTRATOR ALIKE, STATEMENTS OF OBJECTIVES ARE

¹ Robert F. Mager, Preparing Instructional Objectives (Palo Alto, Calif. Fearon 1962)

TYPICALLY HOUSED UNDER NEBULOUS OR CONFUSING CATEGORIES. THEY LACK INTERNAL CONSISTENCY. THEY SELDOM ARE ORGANIZED INTO A LOGICAL SEQUENCE OR HIERARCHY. HOW DO OBJECTIVES IN SUCH LISTS RELATE TO ONE ANOTHER? WHEN OR TO WHAT EXTENT DO THEY SHOW WHICH OBJECTIVES IN SUCH LISTS RELATE TO ONE ANOTHER? WHEN OR TO WHAT EXTENT DO THEY SHOW WHICH OBJECTIVE IS MORE IMPORTANT OR WHICH SHOULD BE PURSUED FIRST, SECOND, LAST, OR CONTINUALLY DURING CERTAIN PERIODS OF TIME OR STAGES OF PUPIL GROWTH, DEVELOPMENT, OR MATURITY?

HOLD THESE QUESTIONS IN MIND WHILE WE REVIEW TYPES OF OBJECTIVES, WAYS OF CLASSIFYING OBJECTIVES, AND STRATEGIES FOR FORMULATING MORE MEANINGFUL OBJECTIVES. WILL SKILL IN FORMULATING BEHAVIORAL OBJECTIVES RESOLVE SOME OF THE SHORTCOMINGS? WILL IT HELP US BECOME BETTER TEACHERS?

TYPES OF OBJECTIVES

COLLEGE PROFESSORS AND PERSONS WRITING TEXTBOOKS IN EDUCATION OFTEN EMPHASIZE GENERAL AND SPECIFIC OBJECTIVES OF INSTRUCTION. GENERAL OBJECTIVES TEND TO REFLECT A THEME OR A CONCERN THAT APPLIES TO EDUCATION IN GENERAL OR TO AN ABSTRACT REASON FOR OFFERING A PARTICULAR COURSE OR SUBJECT. FOR EXAMPLE, THE GENERAL OBJECTIVE OF A COURSE MAY BE "TO HELP CHILDREN BECOME FAMILIAR WITH THE WORKS OF GREAT ENGLISH POETS;" "TO GAIN AND APPRECIATION FOR SCIENTIFIC DISCOVERY IN THE EIGHTEENTH CENTURY;" OR "TO HAVE AN UNDERSTANDING OF THE CONTRIBUTIONS OF MINORITY GROUPS TO THE CULTURE OF GREECE, KENYA, AUSTRALIA, CHINA, AND THE UNITED STATES."

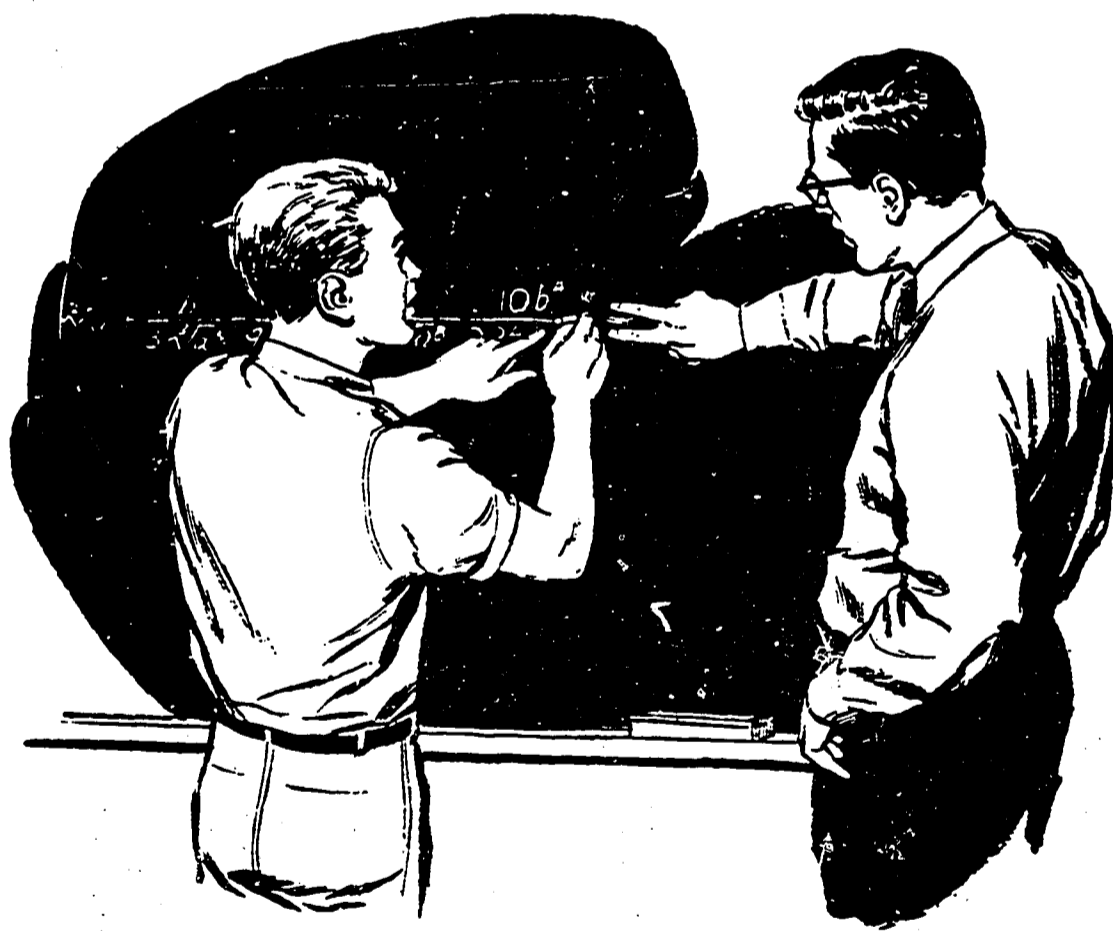
SPECIFIC OBJECTIVES TEND TO BE THOSE THAT DIRECT STUDENT ACTIVITY TOWARD ACQUIRING SPECIFIC TRAITS, ATTITUDES, SKILLS, AND KNOWLEDGE. THEY MAY OR MAY NOT BE BEHAVIORAL IN NATURE. EXAMPLES OF SPECIFIC OBJECTIVES MAY BE: "AT THE END OF THIS COURSE, THE STUDENT WILL BE ABLE TO LIST FIFTEEN RIGHTS OF AMERICAN CITIZENS"; "HE WILL BE ABLE TO DOCUMENT THE CONTRIBUTIONS OF ENGLISH POETS TO AMERICAN LITERARY CRITICISM"; "HE WILL BE ABLE TO DESCRIBE FIVE SCIENTIFIC INVENTIONS CREDITED TO EACH OF THREE EUROPEAN SCIENTISTS WHO LIVED IN THE EIGHTEENTH CENTURY."

BEHAVIORAL OBJECTIVES ARE REFLECTIONS

WHY WE TEACH --

WHAT WE TEACH --

HOW WE TEACH--



OBJECTIVES:

OBJECTIVES, THEREFORE, ARE REFLECTIONS OF WHY WE TEACH. THEY ALSO ENCOMPASS OR AFFECT WHAT WE TEACH, THE WAY WE TEACH, AND HOW WELL WE TEACH.

WHY WE TEACH

WE TEACH IN ORDER TO DO OR TO ACCOMPLISH SOMETHING, TO CHANGE INDIVIDUALS AND THE SOCIETY, TO MODIFY BEHAVIOR, AND TO ASSURE A NEW LEVEL OF COMPETENCE IN PERFORMING CERTAIN FUNCTIONS.

WHAT WE TEACH

WHAT WE TEACH (THE CONTENT OF OBJECTIVES) INVOLVES SELECTION. AND THE PROBLEM OF SELECTION IS, INDEED, A HORRENDOUS ONE -- WITH BOTH MUSHROOMING AND RAPIDLY ERODING KNOWLEDGE. PRIORITIES ARE URGENTLY NEEDED AS WE QUESTION THE NECESSITY OF LEARNING MANY OF THE CURRENTLY "REQUIRED" (AND OFTENTIMES "TIRED") FACTS, AND AS WE CONCERN OURSELVES WITH RESTORING SOME SEMBLANCE OF BALANCE AMONG MEMORIZING FACTS, ACQUIRING DESIRABLE ATTITUDES, AND DEVELOPING SKILLS. CERTAINLY IF WE WOULD CONCERN OURSELVES WITH OPTIMUM AND FULL DEVELOPMENT OF INDIVIDUALS, WE WOULD HAVE TO OVERCOME INERTIA, GET OFF THE "HERE ARE THE FACTS" MONORAIL, AND FOSTER THOSE THINKING AND FEELING TRAITS AND BEHAVIORS THAT ARE UNIQUELY HUMAN AND HUMANE. IN ADDITION TO ACQUIRING MEANINGFUL CONCEPTS AND UNDERSTANDINGS (HOWEVER, IF WE ARE TO DEFINE THE TERM "MEANINGFUL"), WE MUST, IN MY OPINION, INCLUDE HIGHER INTELLECTUAL AND CREATIVE SKILLS IN WHAT WE TEACH.

WHO WE TEACH

THE WAY THAT WE TEACH OR HOW WE TEACH IS OFTEN CLEARLY EVIDENT BY THE OBJECTIVES WE CHOOSE AS WELL AS BY THE PEDAGOGY WE EMPLOY. THE "HOW WE TEACH" IS SO WRAPPED UP IN STYLES OF TEACHING AND WAYS OF RESPONDING TO AND MOTIVATING DIFFERENT INDIVIDUALS AND GROUPS -- IT IS SO INVOLVED IN THE ART OR ARTISTRY OF

OF TEACHING -- THAT IT MAY BE HAZARDOUS TO GENERALIZE ON THIS POINT. BUT AT LEAST WE MAY BE ABLE TO POINT SOME DIRECTION FOR OBJECTIVES.

AT ONE END OF A CONTINUUM WE SEE COOKBOOK TEACHING. HERE THE TEACHER SERVES PRIMARILY AS A TECHNICIAN IN APPLYING CERTAIN RECIPES. AT THE OTHER END WE SEE CONCEPTUAL OR "TAXONOMIC" APPROACHES IN WHICH THE TEACHER ORCHESTRATES THE ACQUISITION OF KNOWLEDGE, THE FORMATION OF CONCEPTS AND GENERALIZATIONS, AND THE DEVELOPMENT OR REFINEMENT OF INTELLECTUAL SKILLS AND TRAITS OF CREATIVITY.

ALTHOUGH THE LATTER MAY BE THE PROFESSIONAL APPROACH, AND MAY REPRESENT SOME KIND OF IDEAL, WE NEED NOT SCOFF AT COOKBOOK ARTISTRY OR TECHNICAL ASPECTS OF OUR JOBS. IT MAY, INDEED, BE NECESSARY TO START WITH AND USE CERTAIN PROVEN RECIPES UNTIL WE ARE ABLE TO ORCHESTRATE THE NATURE OF AND OUTCOMES OF TEACHER-PUPIL ENCOUNTERS. THERE ARE BOTH PROFESSIONAL AND TECHNICAL ASPECTS OF CURRICULUM CONSTRUCTION AND OF THE ROLES OF DIAGNOSTICIAN AND PRESCRIPTION EXPERT.

GAUGING PUPIL GROWTH AND TEACHER PERFORMANCE

THIS LEADS TO OUR NEXT POINT. OBJECTIVES ARE OR AT LEAST SHOULD BE INTIMATELY RELATED TO EVALUATION. WE MAY GAUGE BOTH PUPIL GROWTH AND TEACHER PERFORMANCE BY THE DEGREE TO WHICH OR THE MANNER IN WHICH TEACHING TECHNIQUES, CLASSROOM ENVIRONMENT, AND INSTRUCTIONAL MATERIALS HELP THE STUDENT TO REALIZE OBJECTIVES CLEARLY DEFINED IN BEHAVIORAL TERMS.

PARAMETERS, COMPONENTS, OR ASPECTS OF BEHAVIORAL OBJECTIVES, THEN, ARE "WHY WE TEACH," "WHAT WE TEACH," "HOW WE TEACH," AND THE "EFFECTIVENESS OF OUR TEACHING."

CHANGING BEHAVIOR

THE SCHOOL IS AN AGENCY ESTABLISHED TO MODIFY BEHAVIOR. UNFORTUNATELY TOO MUCH OF THE ACTUAL CHANGE IS A MATTER OF HAPPENSTANCE RATHER THAN OF DELIBERATE WILL AND CAREFUL PLANNING. THIS SEEMS INDEFENSIBLE WHEN ONE PAUSES TO REALIZE THAT WE KNOW

ENOUGH ABOUT HOW PEOPLE THINK, DEVELOP, AND REACT TO PLAN GLOBAL STRATEGIES FOR FULL DEVELOPMENT OF THEIR POTENTIALITIES. WE CAN EMPLOY DIAGNOSTIC AND PRESCRIPTIVE WRITING SKILLS. WE CAN USE MEDIA AND MULTIMEDIA TECHNIQUES. WE CAN USE STUDENT RESPONSE SYSTEMS. WE CAN USE COMPUTERS TO RETRIEVE, DISPLAY AND MANIPULATE DATA. WE CAN EXPOSE CHILDREN TO SIMULATIONS AND TO CERTAIN RESPONSIVE ENVIRONMENTS. WE CAN DO ALL THESE THINGS AND MANY MORE TO DEVELOP PRACTICAL SKILLS, THE HUMANITY IN MAN, AND "THE MORE STATELY MANSIONS" OF HIS SOUL. YET WE CONTENT OURSELVES WITH PUTTING CHILDREN INTO FORMALIZED SITUATIONS THAT HAVE LITTLE MEANING TO THEM. YET WE INSIST UPON MAKING THEM ALL INTO LITTLE STORAGE UNITS OF FACTS -- MUCH LESS EFFICIENT, BY THE WAY, THAN MAGNETIC DRUMS, TAPES, OR PUNCH CARDS.

CERTAINLY ALL THESE THINGS COST MONEY, AND IN TOO MANY INSTANCES TEACHERS AND PRINCIPALS DO NOT HAVE SUFFICIENT MATERIALS, EQUIPMENT, AND CONSULTANT HELP. HOWEVER, THE CHANGE OF BEHAVIOR IS OFTEN EFFECTED IN THE TRANSACTIONAL RELATIONSHIPS -- THE HUMAN BEING-TO-HUMAN BEING ENCOUNTERS OF PUPILS AND TEACHERS THOSE COMPASSIONATE AND COMPETENT TEACHERS WHO ARE CONCERNED WITH AFFECTING HOW CHILDREN BEHAVE, HOW THEY THINK, AND HOW THEY ACT WHEN CONFRONTING PRACTICAL PROBLEMS OF THEIR WORLD, DELIBERATELY SET ABOUT WHENEVER POSSIBLE TO CHANGE OR MODIFY BEHAVIOR THROUGH CONTRIVED EXPERIENCE -- WHICH GETS CHILDREN TO REACT AND FEEL; ACQUIRE FACTS, CONCEPTS, AND UNDERSTANDINGS; AND PRACTICE CERTAIN SKILLS. THE LATTER MAY BE SUBJECT-MATTER SKILLS, INTELLECTUAL SKILLS, CREATIVE SKILLS, HUMAN RELATIONS SKILLS, AND LEADERSHIP SKILLS ALL SPELLED OUT AND REALIZED THROUGH THE APPLICATION OF STATED BEHAVIORAL OBJECTIVES.

EXPERIENCE

DURING THE PAST FOUR DECADES EDUCATORS HAVE ASSERTED THE IMPORTANCE OF EXPERIENCE-- NOT ONLY AS A MEANS OF MEMORIZING KNOWLEDGE, BUT ALSO AS A MEANS OF DEVELOPING THE CHILD. THE PENDULUM HAS SWUNG BACK AND FORTH -- PUSHED ONE WAY BY THE ADVOCATES

OF RIGOROUS ACQUISITION OF KNOWLEDGE AND PULLED THE OTHER WAY BY PERSONS INSISTING THAT SUBJECT MATTER WAS JUST THE RAW MATERIAL OF THE EDUCATIVE PROCESS IN THE DEVELOPMENT OF PERSONS.

BEHAVIORAL OBJECTIVES AND EXPERIENCE

OUR FOCUS ON OBJECTIVES AND BEHAVIOR DOES TEND TO PLACE US IN THE CAMP OF THOSE WHO EMPHASIZE THE DYNAMIC ASPECTS OF EXPERIENCE RATHER THAN THE MORE ROUTINE ASPECTS OF ACCUMULATING AND CLASSIFYING KNOWLEDGE. YET WE KNOW FULL WELL THE IMPORTANCE OF FACTS IN OUR EVERYDAY LIVES AND IN THE CREATIVE PROCESS AS WELL. WE, INDEED, MAY HAVE TO SATURATE OURSELVES WITH FACTS BEFORE OUR MINDS WILL MAKE NEW ASSOCIATIONS. HOWEVER, UNLESS WE PLAN FOR AND DEVOTE SCHOOL TIME FOR THE APPLICATION AND DIVERGENT USE OF KNOWLEDGE (AND UNLESS WE SCHEDULE TIME FOR IDEAS TO INCUBATE), THESE SAME FACTS MAY INHIBIT THE CREATIVE PROCESS.

PERHAPS IT WOULD HELP US IN PLANNING EXPERIENCES IF WE WOULD DISTINGUISH BETWEEN "COURSE CONTENT" AND "SUBJECT MATTER CONTENT." THE "SUBJECT MATTER CONTENT" MIGHT REFER TO WHAT IS NORMALLY CONSIDERED TO BE THE CURRICULUM -- ALL THE PLANNED EDUCATIVE EXPERIENCE IN OR DIRECTED BY THE SCHOOL. "COURSE CONTENT" WOULD THEN INCLUDE SUBJECT MATTER CONTENT, BUT IT WOULD ALSO INCLUDE OTHER ASPECTS OF CONTRIVED EXPERIENCE SUCH AS IMPROVEMENT OF SUBJECT MATTER, WITH HIGHER-COGNITIVE, AND CREATIVE SKILLS.

HOW SHOULD WE BEGIN TO FRAME BEHAVIORAL OBJECTIVES

IF WE HOPE TO BECOME MORE SKILLFUL IN FRAMING OR DEVELOPING BEHAVIORAL OBJECTIVES, WE WILL HAVE TO: ESTABLISH CRITERIA FOR WHAT IS AND WHAT IS NOT A BEHAVIORAL OBJECTIVE, EMPLOY CERTAIN TECHNIQUES IN FORMULATING THESE OBJECTIVES, AND PRACTICE WRITING THESE OBJECTIVES AS A PART OF BOTH INDIVIDUAL AND GROUP EFFORT.

BEHAVIORAL OBJECTIVES -- SYSTEMS STRATEGY

QUESTION:

WHAT CAN THE LEARNER DO AS A RESULT OF INSTRUCTION THAT HE COULDN'T DO BEFORE?

ANSWER:

TEACHERS MUST SPECIFY CLEARLY FOR THEMSELVES, THEIR STUDENTS, AND THEIR SUPERVISORS THE LEARNING OBJECTIVES AND BEHAVIORAL CHANGES THEY SEEK:



QUESTION:

WHO IS RESPONSIBLE WHEN INSTRUCTION
IS UNSUCCESSFUL ?

ANSWER:

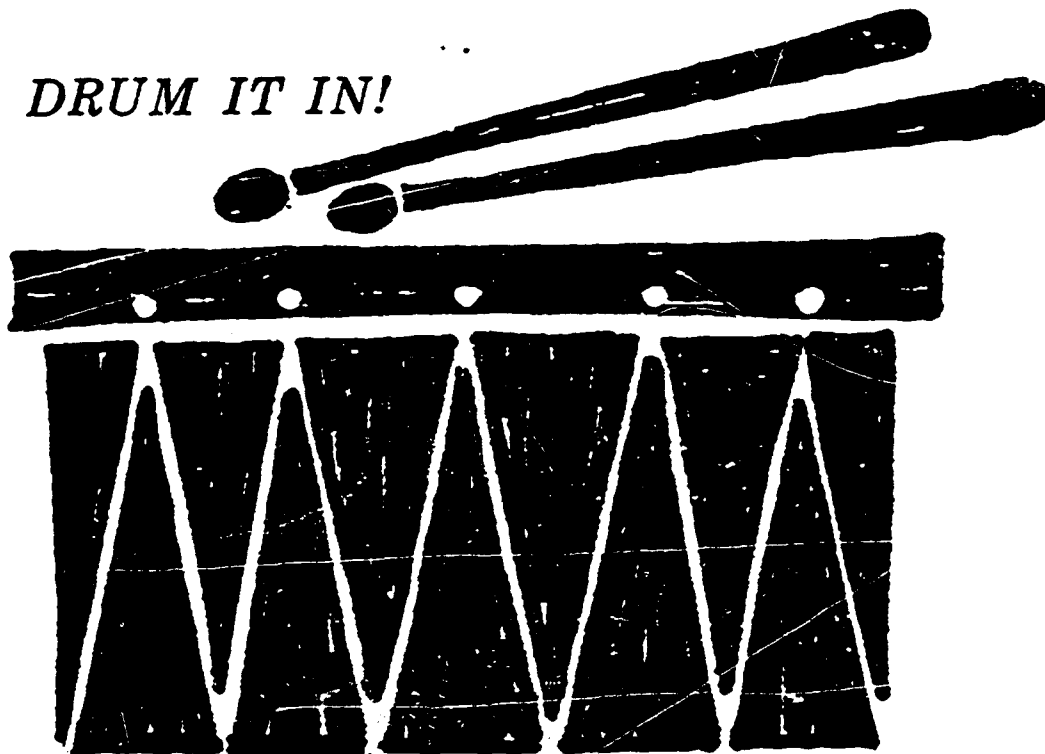
THE INSTRUCTIONAL PROGRAM ITSELF, I.E.,

THE PROCESS, METHODS, MATERIALS ,
OR TECHNIQUES EMPLOYED, CAN BE
RECOGNIZED AS SHARING SOME OF THE
RESPONSIBILITY FOR FAILURE!

ANSWER:

THE STUDENTS ARE NOT NECESSARILY
EXONERATED FROM THE STIGMA OF
FAILURE, SINCE THEY ARE ACTORS
IN THE LEARNING PROCESS AND NOT
NEUTRAL OBSERVERS OR OBJECTS.

DRUM IT IN!



QUESTION:

WHAT IS THE FOCUS OF THE BEHAVIORAL OBJECTIVES?

ANSWER:

THE APPROACH IS MORE HUMANE IN THAT IT FORCES EDUCATORS TO FOCUS CONTINUOUSLY UPON STUDENTS, RATHER THAN EXCLUSIVELY UPON THE TEACHER'S TECHNIQUE.

ANSWER:

BY ESTABLISHING LEARNING OBJECTIVES AND THRESHOLDS OF DESIRED STUDENT BEHAVIOR, THE TEACHER IS PREVENTED FROM BEING SO PERMISSIVE THAT THE CLASSROOM DEGENERATES.



SOMETHING TO GROW ON!

WE MIGHT BEGIN BY ASKING WHO IS RESPONSIBLE WHEN INSTRUCTION IS UNSUCCESSFUL?

THEREFORE, WE MUST FIRST OF ALL, MAKE A CLEAR, PRECISE DETERMINATION OF WHAT IT IS YOU WANT THE STUDENT TO DO -- WHETHER IT IS TO BAKE A CHOCOLATE CAKE, PUT "RINGS" IN AN AUTOMOBILE ENGINE, SPELL CERTAIN WORDS CORRECTLY, OR SOLVE CERTAIN PROBLEMS WITH THE AID OF A PENCIL, SLIDE RULE, OR COMPUTER

SECOND, ESTABLISH BOTH THE LIMITING AND FACILITATING CONDITIONS UNDER WHICH THE CHILD IS ASKED TO DO WHAT WE ASK.

THIRD, DEFINE PERFORMANCE STANDARDS OR EXPECTANCIES.

FOURTH, DECIDE WHAT METHODS TO USE IN JUDGING WHETHER OR NOT A CHILD HAS MET THE BEHAVIORAL STANDARDS.

HOW CAN WE NOW USE BEHAVIORAL OBJECTIVES IN IMPROVING TEACHING AND LEARNING?

FIRST OF ALL, WE MAY APPLY IT IN CURRICULUM CONSTRUCTION. CONTENT AND EXPERIENCE CAN BE DIRECTED TOWARD MEASURABLE PERFORMANCE AND DEVELOPMENT OF SKILLS. THE PERFORMANCE WE SEEK NEED NOT BE THE PARROTING BACK OF SO MANY WORDS OR SYLLABLES IN A CERTAIN PERIOD OF TIME. INSTEAD, THE MEASURE OF OUR SUCCESS WILL BE OBSERVED IMPROVEMENT IN INTELLECTUAL AND CREATIVE SKILLS, CRAFTSMANSHIP SKILLS, ACADEMIC SKILLS, AND LEADERSHIP SKILLS.

SECOND, WE CAN USE IT TO IMPROVE TEACHING METHODOLOGY. HERE WE ARE CONCERNED ABOUT LESSON PLANS AND STRATEGIES IN EVALUATING PUPIL AND CLASS GROWTH. THROUGH USE OF BEHAVIORAL OBJECTIVES THE TEACHER MAY BECOME A BETTER "PRESCRIBER" OF SKILL DEVELOPMENT SEQUENCES NEEDED BY INDIVIDUALS.

FINALLY, WE CAN USE BEHAVIORAL OBJECTIVES AS A DESCRIPTION OF BEHAVIOR THAT IS

POSSIBLE TO EVALUATE. WE CAN USE OUR UNDERSTANDING OF THE DISTINGUISHING FEATURES OF THIS TYPE OF OBJECTIVE TO DETERMINE WHETHER OR NOT CURRENTLY USED COURSE, TEXT-BOOK, AND CLASS OBJECTIVES ARE BEHAVIORAL IN NATURE; IF THEY DEFINE WHAT CHILDREN DO AS A RESULT OF EXPERIENCE; IF THEY DESCRIBE THE CONDITIONS UNDER WHICH PERFORMANCE WILL BE OBSERVED OR JUDGED; AND IF THEY CONTAIN CRITERIA FOR MEASURING PERFORMANCE.

ONLY IN THIS WAY CAN WE AS EDUCATORS REALLY AND TRULY KNOW WHAT WE CAN AND SHOULD DO IN ORDER TO BE ACCOUNTABLE TO OUR STUDENTS' NEEDS!

Behavioral Objectives: A Close Look

By Robert L. Ebel

Most teachers have heard of behavioral objectives. They have read books and articles which urge them to state their own instructional objectives in behavioral terms.¹ Some of them have tried to do so, and lacking clear success may feel some guilt. A few teachers actually do have statements of behavioral objectives for their courses and build their teaching efforts around them. But the number of these is small. Ammons, in fact, found *no* behavioral objectives in the 300 school systems she surveyed.² Some educators are not greatly concerned with this state of affairs. They see limited value in behavioral objectives and some potential danger in making behavior, rather than cognitive processes, the target of our educational efforts.

The Origin and History of the Concept

Although the phrase "behavioral objectives" has not been widely used until recent times, every program of training does in fact have behavioral objectives, whether they are stated

explicitly or not. The purpose of training for a specific task is to develop the capability for the behavior required by the task. But the broader usage of behavioral objectives in connection with *educational* programs is probably attributable largely to Ralph Tyler.³ While at Ohio State University, he developed a systematic program for the specification, in behavioral terms, of the desired outcomes of a course. Usually these outcomes were a limited number of fairly specific cognitive abilities. Their emphasis was, in part, a reaction to the overemphasis on factual information in many current objective tests of achievement.

With the advent of teaching machines and programmed instruction, suggested first by Pressey⁴ and popularized by Skinner,⁵ the usefulness of behavioral objectives became more apparent, especially to the programmers. Then the cutting edge of innovation moved on to more complex models of systematic instruction. With computers prescribing individualized instruction⁶ and "mastery" replacing "as-much-as-possible" as the goal, behavioral objectives remained an essential feature of innovation.

The net effect of both Tyler's leadership and recent developments has been to convince many teachers

that they ought to state their objectives in behavioral terms. "Help stamp out nonbehavioral objectives" is their only half-facetious slogan.

Justifications for Behavioral Objectives

In the case of programmed instruction and the more complex learning systems, the need for specific, detailed instructional objectives is obvious. Some of these systems may be too complex to be generally feasible, and too impersonal or too inflexible to be generally effective. But where they can be used they require and make good use of behavioral objectives.

But why should the ordinary non-machine-like teacher state his objectives in behavioral terms? Two justifications have been offered. The first, more basic and far-reaching, is that since the general purpose of all education is to change behaviors, course objectives should be stated in terms of the behaviors expected to result from the course. The second is quite different. It justifies the use of behavioral descriptions of objectives on the ground that such descriptions are more meaningful.⁷

When the purpose of instruction is to provide training for a particular task, the first justification can hardly be questioned. Even when the purpose is to provide more general, liberal education, one can argue that it is only justified if it affects behavior somehow, sometime. It may not be possible to foresee all the ways in which learning might affect future behavior, but surely some of the more probable and more important can be anticipated. On the other hand, it is quite clear that such behavioral consequences are not the real objectives of instruction. Those objectives are, rather, the knowledge and understanding, the attitudes and values which induced the behavior or made it possible. To stress behavior as the objective is somewhat inaccurate and misleading.

What of the second justification? Do behavioral objectives have clearer, more definite meaning than nonbehavioral objectives in conventional classroom instruction? In one sense they do because behavior is overt and observable, whereas knowledge, understanding, ability, etc., are hidden in-

ROBERT L. EBEL is professor of education at Michigan State University, East Lansing.

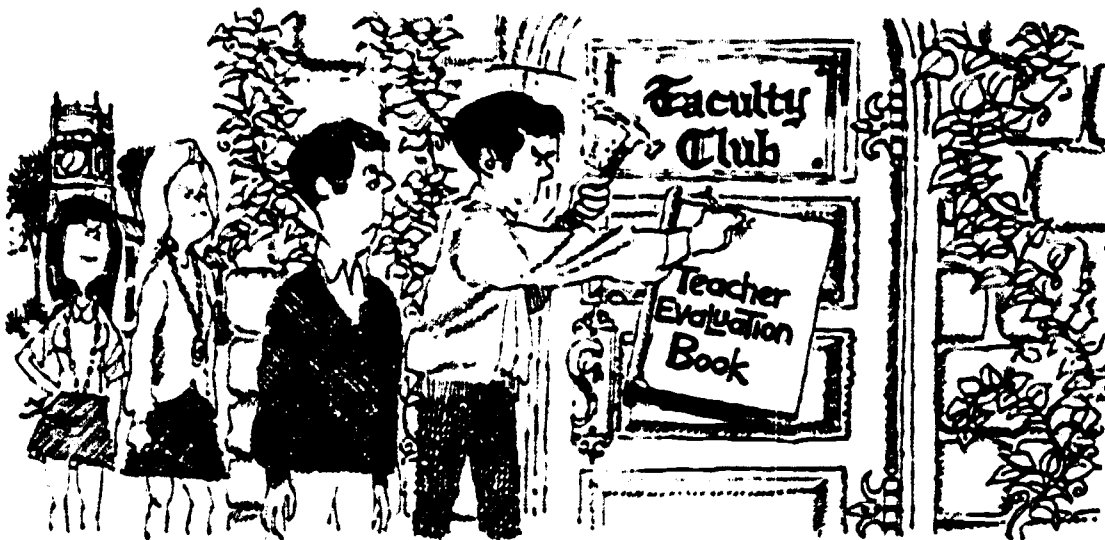
side their possessors. We can assess these internal qualities only by eliciting behavior that is dependent on them. But here again the overt behavior is not the real objective. It is simply a useful indicator. To refer to it as the objective is more apt to confuse than to clarify thinking about educational goals.

Problems with Behavioral Objectives

In view of the widespread endorsement of behavioral objectives, one might expect to find many examples of their effective use. That this is not the case suggests that practical application of the concept may involve some difficulties.

One of these is the difficulty of knowing precisely what the concept means. Some use it as if the behavior in which they are interested is that of the student while he is learning, or even that of his teacher. Others use it to refer to the student's behavior on special tasks designed to show whether or not he has learned something. Still others have in mind the student's use in life, or on the job, of what he has learned in school. While these three meanings are more closely related in some subjects of study than in others, they are distinctly different. One cannot speak or even think clearly about behavioral objectives without defining which type of behavior he has in mind.

Another difficulty is that the behavior specified in these definitions is seldom the real objective of the instruction. When the behavior is that of the learner while learning, it is clearly a means to an end, not the end itself. Nor is test behavior the real objective except in those rare cases where the test is a performance test in a natural setting. Only in the third sense of on-the-job performance can behavior be the real objective. The situations in which such behavioral objectives are appropriate appear to be limited to instruction which aims at the cultivation of particular skills. Behavioral objectives seem quite inappropriate to instructional efforts whose aim is to enable the student to respond adaptively and effectively to unique future problem situations; to equip him to make, independently but responsibly, the kind of individual choices and



"... the faculty is faced with a decisive choice at the present time: if it is not willing to devise ways and means in which good or bad teaching can be adduced and evaluated, other, less well-informed sources will take over the task."

Reprinted from "Special Report to Improve College Teaching"

decisions which are the essence of human freedom.

A useful distinction can be made between training, for which behavioral objectives are often quite appropriate, and education, for which they are seldom appropriate. Educational development is little concerned with the establishment of predetermined responses to recurring problem situations. Rather, it is concerned with the student's understanding, his resources of useful and available knowledge, his intellectual self-sufficiency. It sees him not as a puppet on strings controlled by his teachers, but as one who needs and wants the help of his teachers and others as he tackles the difficult problems of designing and building a life of his own.

A third problem is that of specifying the behavioral objective in sufficient detail. Any significant behavioral act, such as the construction of an achievement test for a course, consists of myriads of contributory acts. Often these are not easy to identify as separate elements in the total matrix of behavior. Often they vary from situation to situation. To identify and specify all of them may be an impossible task. But to the extent that these elements are not specified the behavior is left undefined.

A fourth problem is that of specifying an appropriate level of skill or competence in the behavior. Most significant acts of behavior cannot be said to be either present or absent,

available or unavailable. They occur more or less often when appropriate, and are handled more or less well. To define them as educational objectives requires us to say not only what they are, but how well they are handled. This task also is difficult, and frequently seems to be more trouble than it is likely to be worth.

Some Limitations of Stated Objectives

There are problems in making effective use of any statement of objectives. One is the problem of validity. Simply stating that something is an objective does not make it a desirable one. True, one must think about his objectives in order to state them, and thinking is one of the best ways of working to improve them. But then one must also think about objectives when doing anything rational about educating — when developing materials, planning procedures, or preparing for evaluations. There is no reason to believe that better thinking will go into the statement of objectives than into plans for attaining them.

Another is the problem of flexible adaptability. There is always danger that stated objectives may impose a rigid formality on teaching. Stated objectives may describe what a teacher plans to do, but they should seldom prescribe what he ought to do. On Tuesday he may perceive a more important objective than he wrote into his statement on Monday. The notion

that there is no further need for creative thought about objectives once they have been stated is an enemy of dynamic teaching.⁸

Finally there is the problem of effective use. What do you do with a statement of objectives once you have it? If it is a good brief summary of your general objectives you may discuss it with your students. You may refer to it from time to time to keep your teaching on course, or to keep your evaluations relevant. But if it is a highly detailed statement of specific objectives, the chances are that it will be filed "for possible future reference." It will add little of value to your own cognitive resources, to the materials you use in instruction, or to your planning of instructional procedures. If you value creative teaching, you will not try to follow it step by step.

Conclusion

Teaching is purposeful activity. Part of a teacher's effectiveness depends on his having the right purposes. Hence it is important for the curriculum builder, the textbook writer, the teacher, and the student to think hard about their purposes, about the objectives they seek to achieve.

These considerations support the belief that objectives are important. They do not suggest that objectives need to be stated explicitly or in detail. The pedagogical issues that divide teachers, the inadequacies that limit their effectiveness, cannot be disposed of by statements of objectives. Little that is wrong with any teacher's educational efforts today can be cured by getting him to define his objectives more fully and precisely. We ought not to ask teachers to spend much of their limited time in writing elaborate statements of their objectives.

Nor should we insist that the statements be in behavioral terms. Our main business as teachers is developing the cognitive resources of our pupils, not shaping their behavior. The great majority of teachers at all levels who feel no urgent need to write out their objectives in detail, and in terms of behavior, are probably wiser on this matter than those who have exhorted

them to change their ways. Too much of the current reverence for behavioral objectives is a consequence of not looking closely enough at their limitations.

¹Robert F. Mager, *Preparing Instructional Objectives*. Palo Alto, Calif.: Fearon, 1962; C. M. Lindvall, ed., *Defining Educational Objectives*. Pittsburgh, Pa.: University of Pittsburgh Press, 1964; and David R. Krathwohl, "Stating Objectives Appropriately for Program, for Curriculum, and for Instructional Material Development," *Journal of Teacher Education*, March, 1963, pp. 83-92.

²Margaret Ammons, "An Empirical Study of Process and Product in Curriculum Development," *Journal of Educational Research*, May-June, 1964, pp. 451-57.

³Ralph W. Tyler, "A Generalized Technique for Constructing Achievement Tests," in *Constructing Achievement Tests*. Columbus, O.: Bureau of Educational Research, 1934.

⁴S. L. Pressey, "A Simple Apparatus Which Gives Tests and Scores and Teaches," *School and Society*, March 20, 1926, pp. 373-77.

⁵B. F. Skinner, "Science of Learning and the Art of Teaching," *Harvard Educational Review*, Spring, 1954, pp. 86-97.

⁶C. M. Lindvall and John O. Bolvin, "Programed Instruction in the Schools: An Application of Programming Principles in Individually Prescribed Instruction," in Phil C. Lange, ed., *Programed Instruction*, Sixty-sixth Yearbook, Part II, National Society for the Study of Education. Chicago: University of Chicago Press, 1967, pp. 217-54.

⁷Ralph H. Ojemann, "Should Educational Objectives Be Stated in Behavioral Terms?, Parts I, II, and III," *Elementary School Journal*, February, 1968, pp. 223-31; February, 1969, pp. 229-35; February, 1970, pp. 271-78.

⁸Elliot W. Eisner, "Educational Objectives: Help or Hindrance," *School Review*, Autumn, 1967, pp. 250-60. □

The Instructional Objectives Exchange: New Support for Criterion-Referenced Instruction

By W. James Popham

The quality of any instructional sequence must be evaluated primarily in terms of its ability to promote desirable changes in the intended learner." This assertion, or statements similar to it, have met with the increasing approval of influential American educators during recent years. Nor that it represents a novel conception — one could undoubtedly locate comparable utterances from the very beginnings of educational history. But the increasingly widespread agreement with this conception of instructional effectiveness is new.

Criterion-Referenced Instruction

Perhaps the type of instructional strategy being advocated these days can best be described as *criterion-referenced instruction*. This approach focuses primarily on the degree to which the learner can perform specified criterion behaviors. For example, in preparing instructional materials, the developers decide what to revise

according to learner performance data, not according to the judgment of consulting experts. In another situation, a school district selects one set of supplementary reading texts instead of another because of pupil performance on related criterion tests, not because one set of texts is more attractively illustrated than the other. Such examples accurately suggest that a primary feature of criterion-referenced instruction is a preoccupation with the results of instruction, not the procedures used to promote them. It is an ends-oriented approach to instruction rather than a means-oriented approach. Since most educators concur that the ultimate index of an educational program's worth is the degree to which it benefits the learner, the increased support of criterion-referenced instructional approaches is gratifying.

But against the increasingly supportive backdrop, it is distressing that very few large-scale criterion-referenced instructional operations are under way. Verbal support is there. But there is not yet widespread practical implementation. Why?

A time-consuming task. The principal deterrent to the spread of criterion-referenced approaches is fairly easy to identify. Developing criterion measures of sufficient quality and satisfactory breadth is too much work for most educators.

Much of the recent agitation regarding the desirability of describing in-

structional objectives in terms of measurable learner behavior is based on the belief that the impact of instruction can be more readily assessed by operationally stated objectives. Many proponents of operationally stated educational objectives are beginning to complain about the paucity of such objectives in the schools. Educators can be taught to state objectives properly; they can even become quite enthusiastic about the desirability of stating them behaviorally. But few of them do it. Teachers are already too burdened to find the time to develop operationally stated objectives for their classes. School districts have already committed their increasingly limited resources to other tasks. In those isolated instances where there has been an effort to develop precise instructional objectives on a large scale, the participating educators will readily admit how taxing the enterprise has been. Financial and personnel costs point up another problem. In spite of the difficulties, some districts are undertaking the task. For example, several months ago the Clark County (Nevada) School District developed a set of behaviorally stated objectives for mathematics instruction in grades K-6. There are other examples of such endeavors in various parts of the U.S.

Imminent duplication. The absence of any scheme to acquaint districts with other developmental projects makes it probable that a distressing

W. JAMES POPHAM (1728, University of California at Los Angeles Chapter) is professor, Graduate School of Education, University of California, Los Angeles, and director of the Instructional Objectives Exchange. This article is based on a symposium presentation at the annual American Educational Research Association meeting in Los Angeles, February 5-8, 1969.

amount of duplication will occur. For instance, more than a year after the Clark County, Nevada, schools had completed their preparation of K-6 instructional objectives for mathematics, two districts in different states commenced work on precisely the same project, unaware of the Clark County objectives. The wheel was about to be re-invented.

Objective Selection

It may be expecting too much to ask already harassed teachers and administrators to generate their own objectives. But though *objective generation* may be too demanding, *objective selection* should not be. If the instructor's task were simply to choose from comprehensive sets of operationally stated objectives those which he wished to achieve, his task would be manageable. He could follow through on his commitments to precisely explicated goals without being obliged to construct them himself.

Local option. When the educator is the selector rather than the generator of objectives, there may be some concern regarding the degree to which the objectives will be "imposed from above." A viable objectives selection scheme, however, should permit just that — the *selection* of objectives. If all of the objectives which the selector favors are not available, he can always generate more. Local autonomy in the selection of objectives should be an integral part of any scheme. Objectives should increase the educator's range of alternatives, never decrease his self-direction.

Objectives Plus Criterion Measures

Precise objectives may be necessary, but by themselves they are far from sufficient. Too often even a behaviorally stated objective may be used as window dressing for "instruction as usual." A precise objective can be most helpful when planning an instructional sequence, but it becomes even more useful for evaluating one. To what degree has the objective been achieved? The answer can be given only by measuring devices based explicitly on the objective.

Few districts have made the logical jump from developing objectives to developing test items. "Test items"

include observation of learner behaviors reflecting cognitive as well as noncognitive outcomes. If a school district had access to sets of objectives plus test items, it could readily assess the degree to which its instructional approaches were successful. The existence of a pool of test items for each objective would encourage educators throughout the nation to initiate criterion-referenced instructional strategies.

The Instructional Objectives Exchange

To this end, the UCLA Center for the Study of Evaluation established the Instructional Objectives Exchange in 1968 as a national depository and development agency for instructional objectives and related measurement devices. The exchange will perform the following functions:

1. It will serve as a visible clearing-house to keep abreast of the instructional objectives projects throughout the nation.

2. It will provide a bank-like agency where a school district (or comparable educational agency) can "draw out" all the objectives and relevant measures for as many subjects, grades, topics, etc., as desired.

3. It will continually update, refine, and expand the pool of objectives and measures for each field covered by the exchange.

The potential impact of such an exchange, readily providing pools of objectives and test items from which districts can select, should not be underestimated. With competent staffing, a careful developmental plan, and proper dissemination strategies, the exchange could conceivably alter the nature of instructional practice in America.

Operation of the Exchange

Briefly, this is how the exchange will function. First, we will attempt to make as many educators as possible aware of the existence of the exchange and the service it provides. We have already distributed nationally news releases, magazine articles, letters to school districts, and descriptive brochures. Contained in this literature describing the exchange is a request that any school district or comparable agency which has developed behaviorally stated instructional objectives

contribute these to the exchange. While it is too early yet to say how many collections of behaviorally stated objectives exist throughout the country, there are encouraging indications that there may have been more projects focused on the development of precise objectives than we had anticipated.

As this collection activity progresses, the staff of the exchange will concurrently be developing objectives and related item pools, particularly in those areas where we find few satisfactorily stated objectives. We are now refining our procedures for developing properly stated objectives and criterion-referenced items which accurately reflect the attainment of such objectives. Although our early efforts have quite naturally found us emphasizing cognitive objectives, we hope to soon move to the development of a variety of noncognitive goals.

In early 1970 the Instructional Objectives Exchange separated from the Center for the Study of Evaluation and is now a nonprofit educational corporation. Currently, 35 separate collections of objectives are available from the exchange covering a wide range of subjects in grades K-12. Most of these objectives are accompanied by six test items which may be used to measure whether the objectives have been achieved. While the bulk of these 35 collections are focused on cognitive outcomes, two sets of objectives deal exclusively with affective outcomes, i.e., learners' self concepts and attitudes toward school. A current description of available objectives is obtainable from the exchange, Box 24095, Los Angeles, Calif. 90024.

The response of American educators thus far to the Instructional Objectives Exchange has been encouraging. In the first 18 months of its existence over 20,000 objective collections were ordered from the exchange. All revenues realized from sale of the objective collections are used to develop new collections and to revise previously prepared collections. By their experience-based suggestions regarding modifications in the current objective collections, educators are helping the exchange as it endeavors to produce maximally useful materials to aid those wishing to implement criterion-referenced instructional schemes. □

The Behaviorally Oriented School

AN ENGINEER is a person skilled in the application of a specific class of information to bring about desired outcomes. For example, an electrical engineer is knowledgeable in regard to electricity. He can use the laws of electricity to bring about observable results such as illumination or motion. Similarly, a behavioral engineer is a person skilled in applying the laws of human behavior to bring about observable results. The behavioral engineer can employ the laws of human behavior to bring about behaviors such as reading or computation. The behaviorally engineered school is a structured setting where the laws of human behavior are applied to bring about specified behaviors in students.

The behaviorally engineered school has three fundamental features. It rests upon instructional objectives for the learner, upon the application of laws of human behavior to guide the learner to those objectives, and upon the accountability of all involved persons for the contributions of their behavior to the learnings of children. The fundamental premise is the instructional objective. This is a precise statement of what behavior the learner is to exhibit as a result of the instructional process. Unless there is an observable outcome to instruction, it is not possible to determine whether or not the objectives of instruction have been accomplished, nor to support or refute any instructional strategy.

Once the behaviors intended as outcomes of the instructional process have been identified, various strategies to reach those behaviors can be examined. Because it is behaviors that are the goals of instruction, we can ask the behavioral psychologist what is required to change and maintain behavior. The study of behavior indicates that behavior is a function of its consequences, not a function of inner traits or inferred conditions within the learner. Consequences to behaviors may be called reinforcement. There is a substantial amount of data showing that certain classes of reinforcement, called positive reinforcement, can bring about and sus-

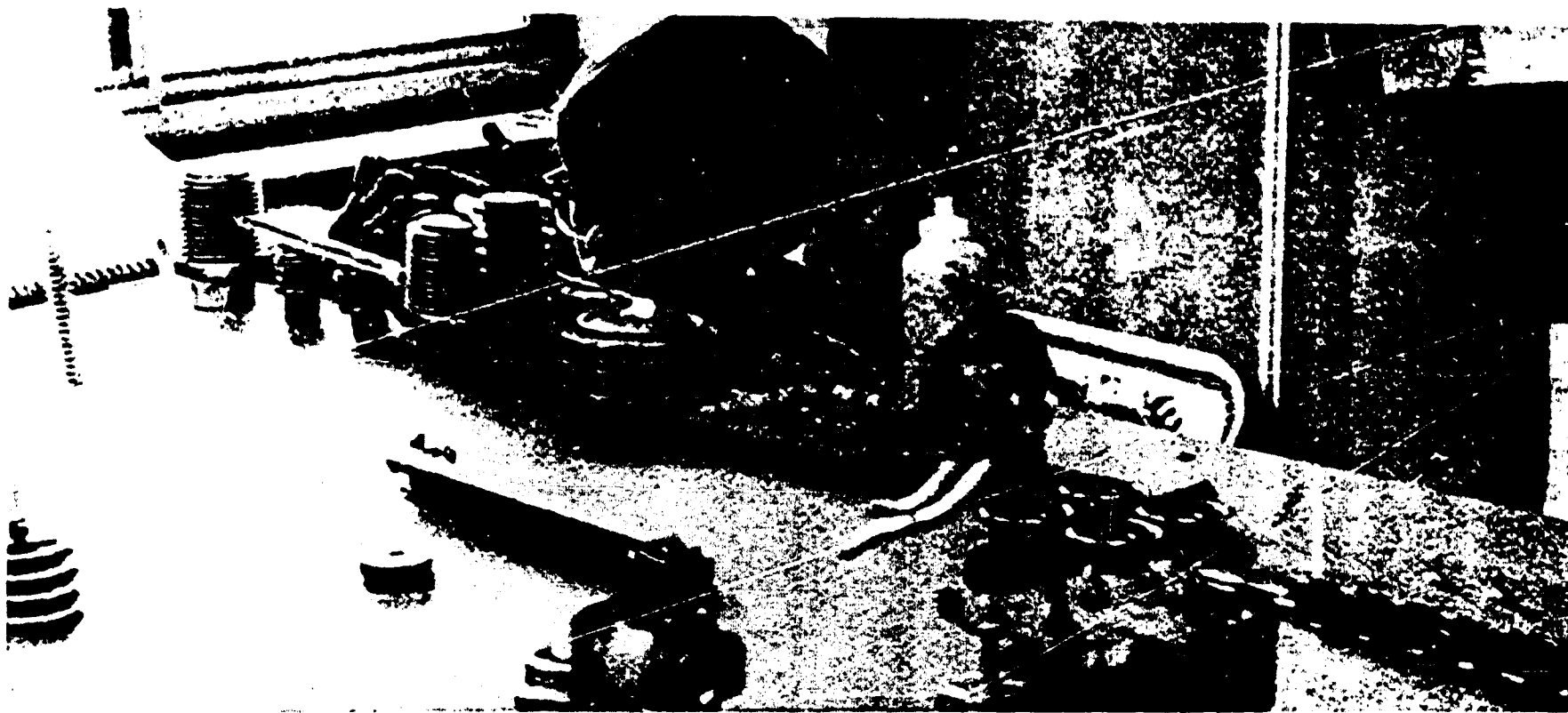
tain behaviors. It is the task of the educator then, to examine this data and the strategies that exist for applying reinforcement in the school setting. It is doubtful that there is a single strategy that is proven to be the most efficient and effective in bringing about intended learnings in school children. It is quite possible, however, to identify expeditious teaching strategies involving these principles, if teachers are skillful and meticulous in noting their own behavior and the behavior of learners.

Education thus defined is the behavior of learners. The route to accomplishing education involves the reinforcement of desired behaviors. The contributions of all staff members can be accounted for in this process. A major task of a teacher is to prepare instructional objectives and provide reinforcements to learners. The selection of reinforcers requires that the child's culture be examined to identify those aspects of the environment that are reinforcing to the child and useable in the school setting. The instructional objective (child's behavior) and the culture the child lives in (child's reinforcement) become the elements of the contingency contract the teacher prepares. The contingency contract offers the child access to consequences that may be reinforcing, contingent upon performing learning tasks according to clearly stated criteria. Teaching behavior, then, is the generation of contingency contracts from instructional objectives and identified reinforcers. Instructional objectives, contingency contracts, identified pupil reinforcers, and the learner's behavior are measureable and observable things that can be held accountable to teachers.

A major difference between a typical school and a behaviorally engineered school is in the commitment of staff members. A behaviorally engineered school must have a staff that will commit itself to the three fundamental principles of a behaviorally engineered school; instructional objectives for students, application reinforcement to desired behaviors, and accountability of all staff members for contribution to

the achievement of instructional objectives. Teachers must be willing to learn and apply the principles of reinforcement. Commitment further demands an openness to question all the traditional myths, and practices that surround "teaching," and substitute for long-standing myths, an orientation that looks at behaviors and the defensible laws that govern behavior. In this context, any staff member's behavior must be justified by its contribution to the learnings of children. Anything we ask of children must be justified because it is directly tied to the child's attainment of an instructional objective. Commitment must come from the district superintendent by allowing each attendance unit the autonomy to establish and maintain its behaviorally engineered instructional program.

This statement is intended only to present the notion of a behaviorally engineered school. It does not purport to be a plan for implementation. A plan of implementation for a behaviorally engineered school must come from within a school district and account for existing political and economic conditions. A behaviorally engineered school suggests change and change must be amenable to the social climate of the district and neighborhood the school serves. Behavior of students in school is maintained and changed by reinforcement. The behavior of teachers and other school personnel functions within the same laws. A change in school operation will occur because of changes in the behavior of school personnel. The consequences that reinforce changes in teacher behavior must exist in the school setting and remain there. An outside agency cannot implement a behaviorally engineered school because when the outside agency leaves it is likely the reinforcers that brought about the change in teacher behavior will also leave. The behaviorally engineered school will exist when school personnel state the instructional objectives for students, and use identified reinforcers to bring about the desired behavior in students. Is this more than we can expect from teachers and administrators? ♦



THE OVERRIDING ISSUE:

A Place for Behavioral Objectives In American Education

Professor Robert Beck of the U of M has called the lack of clearly defined educational objectives the "overriding critical issue in American education." As we note the vast quantity of writing that defines education objectives, we may question what additional efforts in this direction may accomplish. A thoughtful consideration of what is suggested by Professor Beck may, however, offer a fruitful path for consideration.

In the Classroom

Children in public school classrooms typically engage in school activities with little careful attention

to specific outcomes. Objectives are described as pages covered. Objectives are usually organizational *i.e.*, what the teacher will do. Teachers can be heard to say that certain books, projects, or activities are "good for pupils." The rationale underlying the reason why a certain activity is good, is usually a traditional response based on intuitive speculation about pupils and learning. Within this context, the teacher can offer no evidence of what has been accomplished. When there is no statement of what pupils will be able to do at the end of a period of instruction, there can be no claim of accomplishment. At best, what

can be claimed are anecdotal reports of behavior changes or standardized test scores that show a doubtful relationship between the pupil's test scores and the activities of the teacher.

In this situation, there is no sturdy ground to either support or challenge the teachers' efforts or the child's performance. If the teacher can state what behaviors the child will be expected to demonstrate at the close of the instruction period, there can be no question about the child's achievement. The teacher can observe the effectiveness of varying instructional methods by noting their effects on the child's performance. It is far more defensible to build a case for a given instructional method, material, or strategy when the teacher is able to show the outcomes produced.

Behavioral objectives for every learner in the classroom provide a solid focal point for teacher, learner, and public to assess the contribution of the school to the education of children. There can be no assessment until the behavioral outcomes are stated. No person would submit to diagnosis and treatment by a phy-



Donald J. Christensen is a consultant for the Minnesota State Department of Education. He earned his BS degree at Wisconsin State University at LaCrosse and his MA degree at the University of Chicago. Mr. Christensen is currently a doctoral student at the U of M, Minneapolis. Mr. Christensen has held positions as classroom teacher, principal, college instructor, research assistant, and was most recently director of education at the Job Corps Center in Clam Lake, Wisconsin.

Source: Minnesota Journal of Education, pp. 11, 12, 13. May, 1970.

could not be observed by the patient. The physician can determine the healthy body by observing certain indices, e.g., body temperature, blood count, blood pressure. When these indices indicate disorder, treatments can be prescribed. The effect of treatments are noted from the same indices. Similarly, teaching can be rendered far more precise by placing the activities in a scientific context. The teacher should state what the behavioral outcome of the instruction will be and what observations can be made to assess the learners' behavior. A comparison of pupils' existing behavior with the behavior of the achieved objective will reveal any deficiency. Periodic examinations of pupil behavior can reveal the approximations in the behavior of the objective. Stating educational goals as learner behavior can make education a far more precise and defensible activity.

In the Total School Program

The public schools, the university, and the professional schools can do well to scrutinize the requirements of graduation. Placing the program of a school on a behavioral basis can bring precision to the operation. The study of human behavior has established that learning occurs at differing rates. Yet the programs leading to degrees and diplomas require the same acts of all participants either sitting for a number of years or for a number of classes. The high school graduate has sat in high school four years regardless of his reported capacity to deal with the materials during that time. The college graduate is required to accumulate a specific number of credits (a function of time). Indeed, efficiency, independence, productivity, and individual performance can be far better served by a reorientation of educational goals toward behavior of learners, rather than as institutional requirements. By stating behaviors that mark a high school (or university) graduate, the individual who holds that status does so as a matter of his behavior, not because of institutional benediction. Able learners can move rapidly to the educational goals, thereby reinforcing their own efforts. Students of modest ability are allowed latitude to move toward educational goals without aversive

reinforce
require

So
as in
erally
stated
be no
the o
terpr
descr
the s
tion
school
fectiv
learn
the
readi

Th
tiona



by time re-

y attacked
, and gen-
here is no
, there can
ram. When
ational en-
guage that
of learners.
solid posi-
When the
varying ef-
that guide
outcomes,
grams can

an educa-
be placed

in more le
directing at
of learners
haviors sho
those who l
cative proc
purport to
and profess
deed far m
upon the b
on organiza

In Profession

Teachers
manding gre
pation in sc
ation of th
suggest that
in the eval
performance

MINNESO

on. Placing the school on a behavioral orientation that focuses on the behavior of the learner can contribute to resolving these controversies.

Where there exists no statement of what the observable outcome of instruction should be, there can be no defensible claim of accomplishment or failure. In the contemporary scene, critic and proponent alike can conjure up evidence to support his claims. There are cases of success, young people who have emerged from the school to make great contributions. Critics point to rising dropout rates, especially among minority groups, and social disorders on campus and in high school as glaring evidence of failure. Without behavioral criteria we cannot say with certainty, who is correct or incorrect. Orderly resolution to the educator's dilemma lies in rebuilding educational objectives to those that clearly describe learner behavior that is to occur as an outcome of the instructional process.

When the outcome of the educational process is stated as observable behaviors, there can be no question whether or not the educational agency has done its task. It follows that if we can observe that the agency has brought its learners to the behavioral objectives, we can infer that the staff responsible for the agency's program have performed satisfactorily and should be accordingly rewarded. If the learners have exceeded the educational goals, there is defensible data to further compensate the responsible persons. When the learners consistently fail to meet educational goals, those adults responsible for the instructional program may have reduced rewards, or may be replaced.

When we know what behaviors are the intended outcome of instruction, we can readily observe what teachers have favorably or unfavorably influenced the learners. This is the essence of merit pay. Rewarding with greater compensation the teacher who has a greater favorable impact upon learning, is what merit compensation systems attempt. The administrator who can systematically observe the learning ecology within the district he supervises can thus identify the most able teachers. The administrator can then build a solid case to defend those

practices and teachers that are most effective in bringing about the instructional objectives of the school's program.

We may predict with guarded accuracy, that the organization that can first engage and utilize this view may well hold the strongest position in the bargaining arena. The teacher organization that can promise to deliver specified learner behaviors can probably secure a handsome compensation, contingent upon the delivery of the named behaviors. It is likely that the compensation can be enhanced for delivery of behaviors exceeding those stipulated. Such speculation hinges upon the promise that those rewards that can be offered are sufficiently reinforcing as to affect accelerated outcomes. Similarly the board of education that can demand compensations contingent upon behavioral outcomes of the learners, should find itself in an advantageous position in the negotiation scene.

Reordering the educational enterprise to focus on the behavioral outcomes of the learner, can indeed hold significant implications for the educator as well as for the learner.

In the Social Milieu

Schools are directly involved with educational offerings for children of disadvantaged and minority populations. In spite of the rulings of the courts, many districts have avoided squarely attacking the issue surrounding education and segregation. Particularly in Northern cities, schools have held to the local attitude, passively providing programs for children in the attendance unit under the neighborhood school concept. A systematic observation of the situation may well reveal unclear statements of what is in fact an integrated school, or the observable outcome of integrating a school. In the behavioral context, we may suggest that the initial approach is to identify the observable conditions that constitute the integrated school. Research of learning environments tells us that pupils' learnings are adversely affected by grouping together pupils from predominately lower socio-economic backgrounds. If these data are accepted, observable objectives for integration can be constructed. An integrated school can be defined by

using observable criteria.

By way of illustration, Dr. Robert Williams in a paper prepared for the Minneapolis board of education suggests an observable objective for correcting alleged segregation and racial imbalance. In his example the elements of a well-drawn behavioral objective are evident:

Conditions: Given . . . the racial ratio of the total community as determined through local census or school sight count; and the economic range for the entire community, as determined from Health, Education, and Welfare poverty line, or A.F.D.C. data.

Criteria: Ascertain a sliding scale for racial-economic groupings indicating a floor below which no racial-economic group percentage will be allowed to fall, and a ceiling above which no racial-economic group will be allowed to exceed more than 35 percent black minority pupils and 95 percent white; or no school would be allowed to fall below 5 percent black pupils and 65 percent white pupils . . . or exceed 35 percent of its pupils below the poverty standard . . . or exceed 95 percent of its pupils above the poverty standard . . .

Observable Act: Observe the profile of enrollment within attendance units and compare that enrollment profile with the criteria.

The objective of the program set forth by Williams cannot of itself provide that rectification for nearly three centuries of discrimination in schools. The major dynamics to bring about the integration require the commitment of people to generate the profile described by the criteria. The suggestion is that the observable criteria (objective) are a solid basis to determine the accomplishment of integration.

Discrimination has essentially been the target of civil rights legislation passed since 1954.

Discrimination can, however, be dealt with behaviorally through legislation requiring behaviorally stated policies in the educational system. Compliance with law and policy can eventually bring about changes in behavior from which can be inferred "positive changes in attitude."

This brief statement has attempted to present an argument in support of reordering educational objectives. The argument has held that the educational enterprise can upgrade its activities when the outcomes of the educational process are stated as behaviors of the learner. Until this is done, the educational enterprise has no record to stand on. ♦

POTENTIAL USES OF INSTRUCTIONAL OBJECTIVES EXCHANGE

INTRODUCTION

Innovations can be Challenging

This document was prepared at the request of school personnel who are sympathetic to the general goals of the Instructional Objectives Exchange (IOX), but recognize that educational innovations are often misunderstood, and consequently resisted, by potential users. The general conception of instruction endorsed by IOX is that instructional improvement is facilitated by clearly defining desired instructional outcomes and then measuring learner post-instruction attainment of those outcomes. These educators suggested, therefore, that something comparable to a "resource unit," consisting of many possible utilization procedures, be prepared for IOX participants. This compilation of possible activities is a response to that need.

Alternatives, Not Prescriptions

The suggestions on the following pages are offered as alternatives, not prescriptions. Any school or school district might choose to engage in only a few of these many activities. The diverse array of procedures should make it clear that there are several possible ways in which the objectives can effectively be used. In examining all these alternatives, however, the reader will detect the underlying IOX theme: a commitment to the desirability of well-defined instructional goals and to objectives-based evaluation. In keeping with that philosophy, the suggested uses are biased in favor of assessing the quality of instruction in terms of measurable learner growth.

Strategy and Tactics of Change

Because the use of a bank of instructional objectives is a significant departure for many teachers, careful consideration should be given to the recommended plans for initiating changes. For example, it would be imprudent for an administrator to force teachers who are otherwise uninformed to choose from objectives in the IOX Collections. Clearly, teaching personnel, supervisors, administrators, and all relevant educational personnel should be partners in this type of enterprise. The astute initiator of educational change will wish to consult some of the more recent references regarding the institution of such plans.

Source: W. James Popham--The Center for the Study of Evaluation,
University of California, Los Angeles.

SELECTION OF OBJECTIVES

Individual or Group Selection

Collections from the Instructional Objectives Exchange can be used by either an individual teacher or a group of teachers (such as a departmental faculty.)

In the case of an individual teacher, an examination of the available objectives will undoubtedly reveal some which he will wish to adopt for his students. These might be used as either a total, a minimal, or a partial set of goals for the class. It is conceivable, of course, that objectives other than those contained in the IOX materials might be taught concurrently with the IOX objectives. Teachers may, therefore, consider IOX objectives as a minimal set of objectives for their classes.

Because different teachers have different preferences, a group of teachers in the same subject-grade level (for example, the faculty of a high school English department) might jointly identify those objectives which were approved by all (or almost all) of the teachers. These objectives could be useful in assessing across-the-board departmental attainment of objectives through the use of pretest and posttest measures of the objectives. An item sampling procedure in which different students in the various classes complete different items could also be used, thereby making cross-class or cross-individual comparisons less likely.

Learner Participation in Selection

It is also possible for students to participate in the selection of the objectives for their own educational programs. The advantages of student involvement in the selection of objectives have been described by a number of writers. Students can be taught, depending upon their level of maturity, to consider the range of objectives in an IOX Collection and indicate those which they think most appropriate for their own instruction. These student preferences can be used as a sole source of the objectives, or can be combined with teacher preferences as a mechanism for selecting objectives.

In addition, students could be taught to generate properly stated objectives other than those available in the Collections. They could be then given the opportunity to generate such objectives. Their conversance with the requirements of measurable objectives could beneficially affect their interaction with an instructional system designed to promote such goals.

Having learners participate in the selection of their own objectives might be particularly appropriate for disadvantaged youngsters who have been discouraged by customary school instruction. The opportunity to play a role in the selection of their own goals could result in greater involvement and subsequent learning success for such students.

Assessing Community Preferences

Another way to select objectives is to assess community preferences of what ought to be taught in the schools. A representative group of citizens might be invited to consider objectives in one or more Collections and then

be interviewed as to which objectives they judge most important, next most important, etc. An actual ranking system of objectives (first choice, second choice, etc.) could be employed. The same plan might be carried out on a less personal basis through the use of mailed questionnaires.

Obtaining rating preferences from members of the local school board should also be given serious consideration. This could be done through interviews, or possibly by employing overall objectives of the school board, if such are available.

A Comprehensive Needs Assessment

Rather than undertaking individual projects to assess the needs of pupils, citizens, and faculty, those using the IOX objectives might undertake a more comprehensive assessment of instructional needs by pooling data from all three sources and then comparing the preferences of these groups. Interviews might be conducted with appropriately sampled representatives of the faculty, the community, and the student clientele. These individuals could be asked to rank the objectives listed in one or more of the IOX Collections, and the rankings could then be compared and interpreted.

Such a comprehensive assessment of needs would undoubtedly yield a better indication of desirable objectives than a less complete data gathering technique. The sophistication of the needs assessment operation will depend, of course, on the resources available to those carrying on the operation. More sophisticated plans will involve stratification of the various groups from which data are secured.

Generating Missing Objectives

Individual teachers or school faculties may certainly wish to generate operationally stated objectives for those areas where none exist. For example, if objectives which a teacher considers important are not included in the current Collection, he could generate such objectives--and even sample items --to fill this need.

INSTRUCTION

In addition to the Collections of instructional objectives available to teachers, a teacher should ideally have a bank of instructional means or procedures which could be used with those objectives. Having once selected instructional objectives from among alternatives, he would like to be able to select instructional means which have a high probability of accomplishing those objectives. Unfortunately, this need cannot now be met.

Some research and development agencies are attacking the problem and hope to provide recommendations on sound procedures or material for given goals. For the foreseeable future, however, the teacher will have to either generate his own instructional plans or identify extant instructional materials and procedures.

While this situation may seem distressing, there is an extremely important advantage in having teachers assess the degree to which current objectives are being achieved. It is probable that a number of objectives now thought to be effectively accomplished by the schools will, upon assessment, be proved unachieved. The mere realization that an intended set of outcomes is not being attained may (and certainly should) stimulate the instructional staff to undertake alternative procedures. This "reappraisal potential" of the Instructional Objectives Exchange should not be under-estimated, for it can stimulate the educator to investigate different, hopefully improved, instructional plans.

An Academic Year, A Teaching Unit, or A Lesson

It must be made clear that an instructor using the IOX objectives need not attend only to the span of an academic semester or an academic year. It is quite possible to select objectives for a teaching unit of only a few weeks' duration or for a single lesson. Instruction can be designed to accomplish objectives which seem achievable in any period of time. Early attempts to utilize IOX materials might profitably focus on short periods of instruction.

Individualized Objectives

Although much planning time would be required, developing an individualized set of objectives for each child is certainly made possible by IOX objectives and test measures.

A comprehensive pretest covering a wide range of objectives considered desirable by the teacher could be given to all students. A different set of objectives could be selected for each student, based upon that student's mastery of the total objectives displayed in the pretest. Individual progress toward the objectives could be made by students through the use of textbooks, self-instruction materials, small group work, teacher direction, etc. Ideally, an individual student could monitor his own progress toward the attainment of his particular set of objectives as the school year passes.

There are some real advantages in employing contingency management plans whereby certain rewards are available to students, based upon the degree to which they achieve their own objectives. Several recent publications* regarding the utility of contingency management procedures might be consulted by the IOX participant.

Revealing objectives to Learners

One of the advantages of precisely stated objectives is that they can be communicated to the learner himself. There are a number of studies which demonstrate that learners who have been informed of the teacher's instructional intentions can far more readily accomplish those goals.

For younger learners, the objectives may have to be modified so that they can be conveyed to the students in understandable language. For more mature students, the actual set of objectives which have been selected may be communicated early in the instructional program (or periodically, as deemed most appropriate by the teacher). Certain objectives such as those in the

affective domain, might not be given to students if knowledge of the objectives would be expected to influence adversely the degree to which the measurement of the objectives can be validly assessed. For instance, the student's knowledge of an affective objective related to good sportsmanship might incline him to behave "for the teacher's benefit."

Supervision By Objectives

Instructional supervisors should, if possible, be involved in the process of selecting and achieving objectives in such a way that their supervisory efforts will be directed toward the more efficient attainment of such goals. Supervisors should be urged to identify the teachers' objectives and to determine the degree to which evidence of attainment has been gathered. The "supervision by objectives" approach has been well explicated by Lucio and McNeil.

The Criterion Check

If possible, teachers should assess their learners' attainment of an objective while there is still some instructional time to work toward unachieved goals. By using a criterion check, that is, a check of the learner's mastery of criterion behaviors (objectives) prior to the final examination, teachers can recycle in order to attain unachieved objectives. By drawing items from the item pools supplied with most IOX objectives, such a criteria check can be readily assembled.

Informing Parents

Since the pupil's home can greatly influence learning, the objectives selected from an IOX Collection might be sent home for the parents' information and, hopefully, supportive interest.

Clinical Discussions of Instructional Procedures

If several teachers are attempting to achieve the same objectives, post-instruction sessions can be set aside for (1) an examination of evidence regarding the attainment of such objectives and (2) clinical discussions of the adequacy of certain procedures in promoting learner attainment of the goals. Remedies for problems must be found -- particularly for unachieved objectives. Teachers who have been successful in achieving the objectives can share their methods with others.

Hypothesis Testing

If time permits, the instructional staff might set up small scale experimental studies in which specific hypotheses regarding the attainment of objectives are tested. As suggested earlier, the effectiveness of differing sequences of objectives (or en route behaviors) might be tested with different groups of pupils. Subsequent judgments could be made on the effectiveness of the several methods.

Correlating Instructional Materials

Some teachers may choose to attempt to correlate available tests and other instructional materials with the particular objectives which have been selected from the IOX Collections. Such activities would greatly simplify the instructional tasks of other teachers. Indeed, such correlations might be shared with teachers in other regions so that a teacher who selects certain objectives could get several references to relevant instructional materials.

Building Practice Exercises

Another activity in which teachers might profitably engage is to build practice exercises for the terminal and en route objectives they have selected. In some cases these practice exercises may exist in available texts or teacher manuals, but in other situations they will require teacher construction. Results of this activity also might be shared with other teachers.

EVALUATION

Developing Additional Test Items

For some of the IOX Collections a sufficient number of test items does not currently exist. Several Collections contain only one sample test item per objective and no additional items for the objectives. Other test items could certainly be generated in order to assess the attainment of the objectives. The addition of such items would greatly facilitate the work of the Exchange -- particularly if they are contributed to IOX so that they can be shared with other teachers.

Quality Control Schemes

IOX objectives are currently being screened by relatively primitive quality control devices -- plans by which to judge the worth of numerous objectives. Interested educators could greatly increase the value of the objectives by exploring and developing alternative ways of judging the quality of those goals.

Which are the truly worthwhile objectives? Upon what bases are decisions made regarding the worth of such goals? Information pertinent to such questions would be of interest to all IOX participants.

Evaluating Instructional Materials

Objectives deemed appropriate for certain textbooks or other instructional materials might form the basis of a comparative evaluation of competing instructional products. For instance, if a district is considering the selecting of two sets of mathematics texts, a small scale evaluation could be undertaken to provide evaluative data useful in the selection decision. Two groups of randomly selected learners could complete the alternative tests, then display relative mastery of the objectives through use of the appropriate IOX test items.

Student Evaluation of Teaching

There is a growing trend to involve students in the evaluation of an instructional staff's teaching proficiency. Student rating forms and faculty evaluation booklets are becoming quite fashionable. If a school faculty wishes to employ student rating procedures, one helpful way of sharpening the relevance of learner ratings would be to have teachers inform the students of the course objectives, then request a rating of teaching skill. The student rater's focus might thus be directed toward the course goals rather than less relevant factors.

Evaluating the IOX System

An overall evaluation of the entire Instructional Objectives Exchange system is needed. Teachers who have used the Collections may be in far better position to suggest improvements of the materials and the manner in which they are disseminated than are those IOX staff members involved in the generation of the materials. A systematic appraisal of the strengths and weaknesses of the system could be made and sent to IOX. Such evaluations would be invaluable in improving the quality of the effort.

References

- Karraker, R. J. Token Reinforcement Systems in Regular Public School Classrooms. (Reprint) Kansas City, Missouri: University of Missouri at Kansas City.
- Kushner, G. et al. What accounts for socio-cultural change? Chapel Hill, North Carolina: Institute for Research on Social Science, University of North Carolina at Chapel Hill, 1962.
- Leeper, R. R. (Ed.). Role of Supervisor and Curriculum Director in a Climate of Change. Washington, D. C.: Association for Supervision and Curriculum Development, 1965.
- Lucio, William and John McNeil. Supervision: A Synthesis of Thought and Action New York: McGraw-Hill Book Company, 1969.
- Miles, M. B. Innovation In Education. New York: Teachers College, Columbia University, 1964.
- O'Leary, Daniel. A Token Reinforcement System in Public Schools. Paper presented at the American Psychological Association, San Francisco, September 1968.
- Popham, W. J. and Baker, E. L. Establishing Instructional Goals, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1970.
- Popham, W. J. and Baker, E. L. Designing an Instructional Sequence, Prentice Hall, Inc., Englewood Cliffs, New Jersey, 1970.
- Popham, W. J., et al, Instructional Objectives, Chicago: Rand McNally, 1969.
- Rogers, E. M. Diffusion of Innovations. New York: The Free Press of Glencoe, 1962.
- Sanders, N. M. Classroom Questions: What Kinds? New York: Harper & Row, 1965.
- Scriven, M. The Methodology of Evaluation. In B. O. Smith (Ed.), Perspectives of Curriculum Evaluation. Chicago: Rand McNally, 1967.
- Tyler, R. W. Basic Principles of Curriculum and Instruction Chicago: The University of Chicago Press, 1950.
- Webb, E. J., Campbell, D. T., Schwartz, R. D., and Sechrest, L. Unobtrusive Measures. Chicago: Rand McNally, 1966.
- Weisner, J. B. Innovations and Experimentation in Education. Science and Society: A Symposium (Rochester, New York: The Xerox Corporation), 1965, 71-72.
- Wolf, Montrose M.; Giles, David K.; Hall, R. Experiments with Token Reinforcement in a Remedial Classroom. Behavioral Research Therapy, 1968, Vol. 6, 51-64.

Audiovisual Aids

Vincet Associates, P.O. Box 24714, Los Angeles, California 90024, distributes 18 validated filmstrip-tape programs, many of which can be used effectively in connection with an in-service education program related to use of IOX materials. Descriptive literature regarding the programs can be secured on request.

Mager Associates, 13245 Rhoda Drive, Los Altos Hills, California 94022, distributes an amusing 14 minute 16 mm. film, Goofing Off With Objectives which might be used in an in-service program related to instructional objectives.

Special Purpose Films, 27640 Latigo Shore Drive, Malibu, California, distributes a series of 16 mm. films dealing with instructional topics relevant to a number of possible in-service programs. Information available on request.

PROBING THE VALIDITY OF ARGUMENTS AGAINST BEHAVIORAL GOALS

Within the last few years a rather intense debate has developed in the field of curriculum and instruction regarding the merits of stating instructional objectives in terms of measurable learner behaviors. Because I am thoroughly committed, both rationally and viscerally, to the proposition that instructional goals should be stated behaviorally, I view this debate with some ambivalence. On the one hand, it is probably desirable to have a dialogue of this sort among specialists in our field. We get to know each other better--between attacks. We test the respective worth of opposing positions. We can have hopefully stimulating symposia such as this one. Yet, as a partisan in the controversy, I would prefer unanimous support of the position to which I subscribe. You see, the other people are wrong. Adhering to a philosophic tenet that error is evil, I hate to see my friends wallowing in sin.

Moreover, their particular form of sin is more dangerous than some of the time-honored perversions of civilized societies. For example, it will probably harm more people than the most exotic forms of pornography. I believe that those who discourage educators from precisely explicating their instructional objectives are often permitting, if not promoting, the same kind of unclear thinking that has led in part to the generally abysmal quality of instruction in this country.

In the remainder of this paper I shall examine eleven reasons given by my colleagues in opposition to objectives stated in terms of measurable learner behaviors. I believe each of these reasons is, for the most part, invalid. There may be minor elements of truth in some; after all, the most vile pornographer must occasionally use a few clean words. In essence, however, none of these reasons should be considered strong enough to deter educators from specifying all of their instructional goals in the precise form advocated by the "good guys" in this argument.

I shall not attempt to develop any arguments in favor of precisely stated goals, for these are treated elsewhere.¹ My only

Source: W. James Popham, The Center for the Study of Evaluation, University of California, Los Angeles--1969

1. Ibid

concern will be with the dubious validity of each of the following reasons.²

Reason one: Trivial learner behaviors are the easiest to operationalize, hence the really important outcomes of education will be underemphasized.

This particular objection to the use of precise goals is frequently voiced by educators who have recently become acquainted with the procedures for stating explicit, behavioral objectives. Since even behavioral objectives enthusiasts admit that the easiest kinds of pupil behaviors to operationalize are usually the most pedestrian; it is not surprising to find so many examples of behavioral objectives which deal with the picayune. In spite of its overall beneficial influence, the programmed booklet by Robert Mager (1962) dealing with the preparation of instructional objectives has probably suggested to many that precise objectives are usually trivial. Almost all of Mager's examples deal with cognitive behaviors which, according to Bloom's taxonomy, would be identified at the very lowest level.

Contrary to the objective raised in reason one, however, the truth is that explicit objectives make it far easier for educators to attend to important instructional outcomes. To illustrate, if you were to ask a social science teacher what his objectives were for his government class and he responded as follows, "I want to make my students better citizens so that they can function effectively in our nation's dynamic democracy," you would probably find little reason to fault him. His objective sounds so profound and eminently worthwhile that few could criticize it. Yet, beneath such facades of profundity, many teachers really are aiming at extremely trivial kinds of pupil behavior changes. How often, for example, do we find "good citizenship" measured by a trifling true-false test. Now if we'd asked for the teacher's objectives in operational terms and had discovered that, indeed, all the teacher was attempting to do was promote the learner's achievement on a true-false test, we might have rejected the aim as being unimportant. But this is possible only with the precision of explicitly stated goals.

In other words, there is the danger that because of their ready translation to operational statements, teachers will tend to identify too many trivial behaviors as goals. But the very fact that we can make these behaviors explicit permits the teacher and his colleagues to scrutinize them carefully and thus eliminate them as unworthy of our educational efforts. Instead of encouraging unimportant outcomes in education, the use of explicit instructional objectives makes it possible to identify and reject those objectives which are unimportant.

Reason two: Prespecification of explicit goals prevents the teacher from taking advantage of instructional opportunities unexpectedly occurring in the classroom.

When one specifies explicit ends for an instructional program, there is no necessary implication that the means to achieve those

²Many of the following remarks are adapted from a symposium presentation at the 19th Annual Conference on Educational Research, California Advisory Council on Educational Research, San Diego, California, November 16, 1967.

ends are also specified. Serendipity in the classroom is always welcome but, and here is the important point, it should always be justified in terms of its contribution to the learner's attainment of worthwhile objectives. Too often teachers may believe they are capitalizing on unexpected instructional opportunities in the classroom, whereas measurement of pupil growth toward any defensible criterion would demonstrate that what has happened is merely ephemeral entertainment for the pupils, temporary diversion, or some other irrelevant classroom event.

Prespecification of explicit goals does not prevent the teacher from taking advantage of unexpectedly occurring instructional opportunities in the classroom; it only tends to make the teacher justify these spontaneous learning activities in terms of worthwhile instructional ends. There are undoubtedly gifted teachers who can capitalize magnificently on the most unexpected classroom events. These teachers should not be restricted from doing so. But the teacher who prefers to probe instructional periphery, just for the sake of its spontaneity, should be deterred by the prespecification of explicit goals.

Reason three: Besides pupil behavior changes, there are other types of educational outcomes which are important, such as changes in parental attitudes, the professional staff, community values, etc.

There are undoubtedly some fairly strong philosophic considerations associated with this particular reason. It seems reasonable that there are desirable changes to be made in our society which might be undertaken by the schools. Certainly, we would like to bring about desirable modifications in such realms as the attitudes of parents. But as a number of educational philosophers have reminded us, the schools cannot be all things to all segments of society. It seems that the primary responsibility of the schools should be to educate effectively the youth of the society. And to the extent that this is so, all modifications of parental attitudes, professional staff attitudes, etc., should be weighed in terms of a later measurable impact on the learner himself. For example, the school administrator who tells us that he wishes to bring about new kinds of attitudes on the part of his teachers should ultimately have to demonstrate that these modified attitudes result in some kind of desirable learner changes. To stop at merely modifying the behavior of teachers, without demonstrating further effects upon the learner, would be insufficient.

So while we can see that there are other types of important social outcomes to bring about, it seems that the school's primary responsibility is to its pupils. Hence, all modifications in personnel or external agencies should be justified in terms of their contribution toward the promotion of desired pupil behavior changes.

Reason four: Measurability implies behavior which can be objectively, mechanistically measured, hence there must be something dehumanizing about the approach.

This fourth reason is drawn from a long history of resistance to measurement on the grounds that it must, of necessity, reduce human learners to quantifiable bits of data. This resistance probably is most strong regarding earlier forms of measurement which were almost exclusively examination-based, and were frequently multiple-choice test

measures at that. But a broadened conception of evaluation suggests that there are diverse and extremely sophisticated ways of securing qualitative as well as quantitative indices of learner performance.

One is constantly amazed to note the incredible agreement among a group of judges assigned to evaluate the complicated gyrations of skilled springboard divers in the televised reports of national aquatic championships. One of these athletes will perform an exotic, twisting dive and a few seconds after he has hit the water five or more judges raise cards reflecting their independent evaluations which can range from 0 to 10. The five ratings very frequently run as follows: 7.8, 7.6, 7.7, 7.8, and 7.5. The possibility of reliably judging something as qualitatively complicated as a springboard dive does suggest that our measurement procedures do not have to be based on a theory of reductionism. It is currently possible to assess many complicated human behaviors in a refined fashion. Developmental work is underway in those areas where we now must rely on primitive measures.

Reason five: It is somehow undemocratic to plan in advance precisely how the learner should behave after instruction.

This particular reason was raised a few years ago in a professional journal (Arnstine, 1964) suggesting that the programmed instruction movement was basically undemocratic because it spelled out in advance how the learner was supposed to behave after instruction. A brilliant refutation (Komisar and McClellan, 1965) appeared several months later in which the rebutting authors responded that instruction is by its very nature undemocratic and to imply that freewheeling democracy is always present in the classroom would be untruthful. Teachers generally have an idea of how they wish learners to behave, and they promote these goals with more or less efficiency. Society knows what it wants its young to become, perhaps not with the precision that we would desire, but certainly in general. And if the schools were allowing students to "democratically" deviate from societally-mandated goals, one can be sure that the institutions would cease to receive society's approbation and support.

Reason six: That isn't really the way teaching is; teachers rarely specify their goals in terms of measurable learner behaviors; so let's set realistic expectations of teachers.

Jackson (1966) recently offered this argument. He observed that teachers just don't specify their objectives in terms of measurable learner behavior and implied that, since this is the way the real world is, we ought to recognize it and live with it. Perhaps.

There is obviously a difference between identifying the status quo and applauding it. Most of us would readily concede that few teachers specify their instructional aims in terms of measurable learner behaviors; but they ought to. What we have to do is to mount a widespread campaign to modify this aspect of teacher behavior. Instructors must begin to identify their instructional intentions in terms of measurable learner behaviors. The way teaching really is is at the moment just isn't good enough.

Reason seven: In certain subject areas, e.g., fine arts and the humanities, it is more difficult to identify measurable pupil behaviors.

Sure it's tough. Yet, because it is difficult in certain subject fields to identify measurable pupil behaviors, those subject specialists should not be allowed to escape this responsibility. Teachers in the fields of art and music often claim that it is next to impossible to identify acceptable works of art in precise terms--but they do it all the time. In instance after instance the art teacher does make a judgment regarding the acceptability of pupil-produced artwork. What the art teacher is reluctant to do is put his evaluative criteria on the line. He has such criteria. He must have to make his judgments. But he is loath to describe them in terms that anyone can see.

Any English teacher, for example, will tell you how difficult it is to make a valid judgment of a pupil's essay response. Yet criteria lurk whenever this teacher does make a judgment, and these criteria must be made explicit. No one who really understands education has ever argued that instruction is a simple task. It is even more difficult in such areas as the arts and humanities. As a noted art educator observed several years ago, art educators must quickly get to the business of specifying "tentative, but clearly defined criteria" by which they can judge their learners' artistic efforts (Munro, 1960).

Reason eight: While loose general statements of objectives may appear worthwhile to an outsider, if most educational goals were stated precisely, they would be revealed as generally innocuous.

The eighth reason contains a great deal of potential threat for school people. The unfortunate truth is that much of what is going on in the schools today is indefensible. Merely to reveal the nature of some behavior changes we are bringing about in our schools would be embarrassing. As long as general objectives are the rule, our goals may appear worthwhile to external observers. But once we start to describe precisely what kinds of changes we are bringing about in the learner, there is the danger that the public will reject our intentions as unworthy. Yet, if what we are doing is trivial, educators would know it and those who support the educational institution should also know it. To the extent that we are achieving innocuous behavior changes in learners, we are guilty. We must abandon the ploy of "obfuscation by generality" and make clear exactly what we are doing. Then we are obliged to defend our choices.

Reason nine: Measurability implies accountability; teachers might be judged on their ability to produce results in learners rather than on the many bases now used as indices to competence.

This is a particularly threatening reason and serves to produce much teacher resistance to precisely stated objectives. It doesn't take too much insight on the part of the teacher to realize that if objectives are specified in terms of measurable learner behavior, there exists the possibility that the instructor will have to become

accountable for securing such behavior changes. Teachers might actually be judged on their ability to bring about desirable changes in learners. They should be.

But a teacher should not be judged on the particular instructional means he uses to bring about desirable ends. At present many teachers are judged adversely simply because the instructional procedures they use do not coincide with those once used by an evaluator when "he was a teacher." In other words, if I'm a supervisor who has had considerable success with open-ended discussion, I may tend to view with disfavor any teachers who cleave to more directive methods. Yet, if the teacher using the more direct methods can secure learner behavior changes which are desirable, I have no right to judge that teacher as inadequate. The possibility of assessing instructional competence in terms of the teacher's ability to bring about specified behavior changes in learners brings with it far more assets than liabilities to the teacher. He will no longer be judged on the idiosyncratic whims of a visiting supervisor. Rather, he can amass evidence that, in terms of his pupils' actual attainments, he is able to teach efficiently.

Even though this is a striking departure from the current state of affairs, and a departure that may be threatening to the less competent, the educator must promote this kind of accountability rather than the maze of folklore and mysticism which exists at the moment regarding teacher evaluation.

Reason ten: It is far more difficult to generate such precise objectives than to talk about objectives in our customarily vague terms.

Here is a very significant objection to the development of precise goals. Teachers are, for the most part, far too busy to spend the necessary hours in stating their objectives and measurement procedures with the kind of precision implied by this discussion. It is said that we are soon nearing a time when we will have more teachers than jobs. This is the time to reduce the teacher's load to the point where he can become a professional decision-maker rather than a custodian. We must reduce public school teaching loads to those of college professors. This is the time when we must give the teacher immense help in specifying his objectives. Perhaps we should give him objectives from which to choose, rather than force him to generate his own. Many of the federal dollars currently being used to support education would be better spent on agencies which would produce alternative behavioral objectives for all fields at all grade levels. At any rate, the difficulty of the task should not preclude its accomplishment. We can recognize how hard the job is and still allocate the necessary resources to do it.

Reason eleven: In evaluating the worth of instructional schemes it is often the unanticipated results which are really important, but prespecified goals may make the evaluator inattentive to the unforeseen.

Some fear that if we cleave to behaviorally stated objectives which must be specified prior to designing an instructional program,

we will overlook certain outcomes of the program which were not anticipated yet which may be extremely important. They point out that some of the relatively recent "new curricula" in the sciences have had the unanticipated effect of sharply reducing pupil enrollments in those fields. In view of the possibility of such outcomes, both unexpectedly good and bad, it is suggested that we really ought not spell out objectives in advance, but should evaluate the adequacy of the instructional program after it has been implemented.

Such reasoning, while compelling at first glance, weakens under close scrutiny. In the first place, really dramatic unanticipated outcomes cannot be overlooked by curriculum evaluators. They certainly should not be. We should judge an instructional sequence not only by whether it attains its prespecified objectives, but also by any unforeseen consequences it produces. But what can you tell the would-be curriculum evaluator regarding this problem? "Keep your eyes open," doesn't seem to pack the desired punch. Yet, it's about all you can say. For if there is reason to believe that a particular outcome may result from an instructional sequence, it should be built into the set of objectives for the sequence. To illustrate, if the curriculum designers fear that certain negative attitudes will be acquired by the learner as he interacts with an instructional sequence, then behavioral objectives can be devised which reveal whether the instructional sequence has effectively counteracted this affective outcome. It is probably always a good idea, for example, to identify behavioral indices of the pupil's "subject-approaching tendencies." We don't want to teach youngsters how to perform mathematical exercises, for example, but to learn to hate math in the process.

Yet, it is indefensible to let an awareness of the importance of unanticipated outcomes in evaluating instructional programs lead one to the rejection of rigorous pre-planning of instructional objectives. Such objectives should be the primary, but not exclusive, focus in evaluating instruction.

While these eleven reasons are not exhaustive, they represent most of the arguments used to resist the implementation of precise instructional objectives. In spite of the very favorable overall reaction to explicit objectives during the past five to ten years, a small collection of dissident educators has arisen to oppose the quest for goal specificity. The trouble with criticisms of precise objectives isn't that they are completely without foundation. As conceded earlier, there are probably elements of truth in all of them. Yet, when we are attempting to promote the widescale adoption of precision in the classroom, there is the danger that many instructors will use the comments and objections of these few critics as an excuse from thinking clearly about their goals. Any risks we run by moving to behavioral goals are miniscule in contrast with our current state of confusion regarding instructional intentions. The objections against behaviorally stated goals are not strong enough. To secure a dramatic increase in instructional effectiveness we must abandon our customary practices of goal-stating and turn to a framework of precision.

References

- Arnstine, D. G., "The Language and Values of Programmed Instruction: Part 2." The Educational Forum, XXVIII, 1964.
- Jackson, P. E., *The Way Teaching Is*. Washington, D.C.: National Education Association, 1966.
- Komisar, P. B. and McClellan, J. E., "Professor Arnstine and Programmed Instruction." Reprint from *The Educational Forum*, 1965.
- Mager, R. F., *Preparing Objectives for Programmed Instruction*, San Francisco: Fearon Press, 1962.
- Munro, T., *The Creative Arts in American Education, "The Interrelation of the Arts in Secondary Education,"* Harvard University Press, Massachusetts, 1960.

OPERATIONAL OBJECTIVES AND IN-SERVICE EDUCATION

The topic of behavioral (or operational) objectives is becoming increasingly dominant in the educational world. Vigorous debates rage at professional meetings regarding the comparative merits and pitfalls of operationalized goals for instruction. Advocates describe behavioral objectives as important in both the rational planning and evaluation of instructional efforts. Yet the sum contribution of the controversy on the practices of teachers remains relatively small. If those who advocate behavioral objectives do not attempt to translate their use in a feasible way for classroom teachers, the objectives contention will fade as many appealing innovations have, without leaving a trace of impact on the quality of education in this country.

There is already some evidence¹ that teachers do not recognize that behavioral objectives are special and represent a departure from the typically impotent instructional goals supposedly in widespread use. So it is naive to expect that the simple dictum "All objectives at a given grade level, school or district are to be behavioral" will make a difference. Teachers must be taught, to use nonbehavioral terminology, to deal with behavioral objectives and to know what use to make of them.

Many school administrators have already tacitly agreed to this point. People knowledgeable about behavioral objectives are repeatedly requested to assist districts in planning in-service training programs designed to teach teachers about the use and benefits of behavioral objectives. The typical pattern is that the administrator wants some of his "top" people to meet with a consultant who will help them operationalize their goals. It is rare when the teachers have had no prior contact with the topic. Usually they have read one of the standard references on behavioral goals or seen a packaged presentation on the topic. The consultant prepares a presentation, and then spends some time allaying the teacher's humanistic doubts that behavioral objectives represent a further, nasty encroachment of technology on the sacred act of teaching. Usually the teachers and the consultant together consider examples of behavioral goals calling for complex cognitive behaviors, as well as some objectives in the attitudinal realm. The meeting, or sometimes, series of meetings, is very satisfying for all concerned. The consultant is happy because he is making contact with living people who work in the real schools, the teachers are happy because they are learning pleasant and stimulating ideas about something they previously thought reprehensible, and the administrator is delirious because he is bringing "agents of change" together.

Source: Eva L. Baker, University of California, Los Angeles--1969.

1. The Effect of Behavioral and Nonbehavioral Objectives on Student Achievement, Journal of Experimental Education.

importance to these results. But they do show that classroom teachers, within a short instructional period (approximately one hour), can learn to perform tasks which have great potential power in improving their results with students.

Yet, is training in such skills the job of the employing school district? Shouldn't teacher training institutions bear the primary burden? The answers are yes and yes. Teacher training institutions should be able to produce teachers who can actually teach, but many of these institutions do not. The school district is put in the unfortunate position of having to hire inadequately prepared teachers. But if the district wants its students to learn, a greater proportion of district resources must go to upgrading the teachers' skills. Behavioral objectives are absolutely essential to the systematic improvement of instruction, since the district can tell if in-service programs are having any effect. They can determine this by observing the performance of students on teachers' stated goals. Even if one concedes that such in-service education programs are necessary to effective instruction, it is also clear that school districts have inadequate resources to do it all. In addition, teachers who have daily responsibilities unfortunately cannot drop everything to learn how to teach.

It is for these reasons that one new project relating to behavioral objectives may be of considerable interest. A bank of instructional objectives has been set up--the Center for the Study of Evaluation at the University of California, Los Angeles.² The Instructional Objectives Exchange has three functions. First, it serves as a depository for behaviorally stated, instructional objectives, produced by school districts and curriculum groups across the country. Educators could request, for example, all objectives in the field of ninth grade social studies which have been deposited. Test items for each objective will also be provided, so that teachers would not have to learn to write objectives and test items. Teachers would have to become selectors of instructional objectives, rather than producers of them.

The Exchange will also disseminate information about current projects in objectives development, so that curriculum groups wishing to develop behavioral objectives would not choose a subject field which already had twelve independently formulated lists of objectives. Last, the Exchange itself is undertaking the development of objectives and measures in those areas where they are not currently available.

Just as in-service training in behavioral objectives is not sufficient, neither is the existence of the Instructional Objectives Exchange. But such an agency can markedly reduce the amount of re-resources particular school districts must expend on the writing of objectives, and coordinate list items. In-service training programs could consist of a persuasive overview of the benefits of operational objectives in planning and evaluating instruction, the

²For information, write Instructional Objectives Exchange, Center for the Study of Evaluation, Department of Education, UCLA, Los Angeles, California 90024

What is the effect of such meetings besides localized euphoria? It is the intent that the few involved teachers will begin to produce operational objectives. Further, it is expected that these objectives will come into extended use throughout the school and perhaps, even the district. The planned result of such dissemination is increased pupil achievement in the areas in which objectives were written.

Unfortunately, such an outcome, while rarely assessed, is even less likely to occur. If educators believe that the transformation of the curriculum into operational statements, itself will have great benefits, they are deluded. For instance, the author was involved in consulting in a school district widely known for its innovative pre-disposition. The principal of one of the schools proudly described that all of his teachers in all of his classes had written behavioral objectives last year. When the author had an opportunity to conduct a meeting with the teachers, she asked whether the teachers had been successful in attaining the objectives. The teachers were somewhat incoherent in their responses. So the more specific question was raised, "When you tested to see how your students did, were they meeting your objectives?" And after a bit more prodding, one teacher replied that the objectives had not been used to generate any testing procedures, and that the objectives, therefore, had not been measured. Behavioral objectives are supposed to be of value because they allow one a clear basis on which to evaluate teaching and they provide guidance in the preparation of instruction. The teachers in the groups above did not even attend to the easier of the two tasks behavioral objectives imply, the writing of appropriate tests. The expectation that they would radically revise their habitual instruction to conform to these objectives is ludicrous. Further, all teachers indicated that they spent an immense amount of time in writing the objectives. If training in the writing of behavioral objectives is insufficient, even granting that teachers will engage in this slow, laborious task without any special administrative consideration, what should an effective in-service training program consist of?

First, the administrator must make it clear to the teachers that "instruction" as usual is not satisfactory, and that the use of behavioral objectives will require a radical departure from what they ordinarily do. The administrator must attempt to provide reinforcers for the teachers to use this more difficult approach, since people, as liquids, seek equilibrium by the path of weakest resistance. Teachers will not normally undertake a difficult way of life, instructionally, simply because they can better help children. Teaching, as other fields of endeavor, does not have enough humanitarians. Reinforcers could consist of released time where the principal or a substitute takes over the class for the teacher on a regular basis, a day a month, for example. The provision of extra clerical assistance, perhaps using secondary school students on work-study programs, might be thought of as a reward by the teachers. Recognition of hard work in intra-school or district-wide publications might also help the teachers to maintain their interest and willingness to spend more time in instructional planning.

Secondly, practice in writing behavioral objectives, must be followed by the construction of items designed to measure whether

the objectives have been achieved. Reliance on standardized achievement tests is inappropriate since these tests rarely measure precisely the set of objectives generated in a particular district, as well as the fact that the test items themselves are then constructed to provide information more appropriate to describing individual differences among students rather than evaluating programs of instruction.

The first two steps described above require that the teacher become first a curriculum expert (one who develops objectives) and then an evaluation expert (one who produces items to measure objectives). For these two tasks alone, intensive in-service training is necessary.

Teachers must, however, then become involved in ways in which they can alter their learning activities so that they increase the probability that their students learn. They must begin to rely on tested principles of instruction which have demonstrable relationships to pupil achievement.

A particular or popular "method," such as an interaction analysis is not implied here at all. Rather, teachers must look carefully at the objectives to see what specific instructional requirements are inherent in them. Teachers should be taught to analyze their objectives into component behaviors or subskills, using a task analysis approach. They should be taught to sequence these concepts or student behaviors, and not concentrate wholly on concepts or topics the teacher presents as the basis of ordering instruction.

Next, extensive practice must be given in generating learning activities which provide opportunity for the student to engage in practice directly relevant to the stated objectives and component behaviors. The teacher should also be trained to use other principles of learning such as confirmation of correct responses. The teacher must practice planning instruction which incorporates the above elements in lessons, and additional practice in executing the lessons in his classrooms must be provided.

Finally, the teacher must become able to make some sense out of the data he gets from his tests. He should not only evaluate his own teaching based on the performance of his pupils, but attempt to revise his instruction and try something new when results are not satisfactory.

If teachers could engage in such skills, they would truly become instructional experts and deserve the title of teacher. There is evidence that in a relatively short period of time, teachers can be taught to engage in many of these tasks. For example, 73 teachers attending an institute on the popular title of developing instructional objectives saw a program designed to teach them to take relatively complex behavioral objectives and analyze them into their component parts. Prior to instruction, the teachers were pretested and achieved 61 percent in their ability to analyze objectives. Following instruction, the average was 85 percent. More important, however, was that of the 73 teachers who participated, 56 of them could generate more subtasks for two given objectives. The significance of such data, using a Sign Test, is far beyond the .001 level. This is not to impute overwhelming

opportunity for teachers to choose the objectives they desire from the extensive lists provided by the Exchange, and finally, systematic practice in the planning of principle-based instruction designed to help the students attain the stated goals.

In-service training in behavioral objectives alone will almost inevitably result in no changes in the abilities of the students our schools produce. But if operational objectives are viewed as a first first step, to be followed by the training of teachers in the use of research-based learning principles to plan instruction, and if teachers provided with reinforcers for really teaching, the schools will begin to produce learners who have really learned.

A SELECTED BIBLIOGRAPHY

This bibliography is organized in three general categories, namely, instructional objectives, instructional sequences, and evaluation.

INSTRUCTIONAL OBJECTIVES

- Bloom, B. et al. Taxonomy of educational objectives, handbook I: cognitive domain. University of Pittsburgh: Learning Research and Development Center, 1967.
- Eisner, E. W. Educational objectives: Help or Hindrance? School Review, 75, 250-266, 1967.
- French, W., et al. Behavioral goals of general education in high schools. New York: Russell Sage Foundation, 1957.
- Gagne, R. W. The analysis of instructional objectives for the design of instruction. In R. L. Glaserx (Ed.), Teaching machines and programmed learning, II, data and decisions. Washington, D. C.: Department of Audio Visual Instruction, National Education Association, 21-65, 1965.
- Herrick, V. E., & Tyler, R. W. (Eds.). Toward improved curriculum theory. Supplementary Educational Monographs, No. 71. Chicago: University of Chicago Press, 1950.
- Krathwohl, D. R. Stating Objectives appropriately for program for curriculum and for instructional materials development. Journal of Teacher Education, 12, 83-92, 1965.
- Krathwohl, D. R. The taxonomy of educational objectives - - it's use in curriculum building. In C. M. Lindvall (Ed.), Defining educational objectives. Pittsburgh: University of Pittsburgh Press, 1964.
- Krathwohl, D. R. et al. Taxonomy of educational objectives, handbook II, affective domain. New York: David McKay Company, Inc., 1964.
- Mager, R. F. Preparing instructional objectives. San Francisco: Fearon Publishers, 1962.
- Popham, W. J. (Ed.). Instructional objectives. Chicago: Rand McNally & Company, 1969.
- Pophom, W. J. & Baker, E. L. Establishing instructional goals. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1969.

INSTRUCTIONAL SEQUENCES

- Arnstine, D. G. The language and values of programmed instruction: part 2. The Educational Forum, 28, 1964.
- Atkin, J. M. Some evaluation problems in a course content improvement project. Journal of Research in Science Teaching, 1, 129-132, 1963.
- Gagne, R. W. The conditions of learning. New York: Holt, Rinehart, & Winston, 1965.
- Gagne, R. W. Curriculum research and the promotion of learning. AERA Monograph Series on Curriculum Evaluation. Vol. 1. Chicago: Rand McNally & Company, 1967.
- Glaser, R. (Ed.). Teaching machines and programmed learning II: data and directions. Washington, D.C. Department of Audio Visual instruction, National Education Association, 1965.
- Glaser, R. Ten untenable assumptions of college instruction. Educational Record, _ , .1968.
- Jackson, P. E. The way teaching is. Washington, D.C.: Association for Supervision and Curriculum Development, National Education Association, 1966.
- Komisar, P. B. & McClellan, J. E. Professor Arnstine and programmed instruction. The Educational Forum, 29, , 1965.
- Lucio, W. H. & McNeil, J. O. Supervision: a synthesis of thought and action. New York: McGraw-Hill, Inc., 1969.
- Mager, R. F. Developing attitude toward learning. Palo Alto: Fearon Publishers, 1968.
- Popham, W. J. & Baker, E. L. Designing and instructional sequence. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1969.
- Pophom, W. J. & Baker, E. L. Systematic Instruction. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1969.
- Tyler, R. W. Basic principles of curriculum and instruction. Chicago: The University of Chicago Press, 1950.
- Wallen, N. E. & Travers, R. M. W. Analysis and investigation of teaching methods. In N. G. Gage (Ed.), Handbook of research on teaching. Chicago: Rand McNally and Company, 1963.

EVALUATION

- Cronbach, L. J. Course improvement through evaluation. Teachers College Record, 64, 672-683, 1963.
- Glaser, R. L. Instructional technology and the measurement of learning outcomes: some questions. American Psychologist, 18, 519-521, 1963.
- Hastings, J. T. Curriculum evaluation: The why of the outcomes. Journal of Educational Measurement, 3, 27032, 1966.
- McNeil, J. D. Antidote to a school scandal. The Educational Forum, 30, 69-77, 1966.
- Popham, W. J. and Husek, T. R. Implications of criterion-referenced measurement. Journal of Educational Measurement, Spring, 1969.
- Sanders, N. M. Classroom questions: what kinds? New York: Harper and Row, Publishers, 1966.
- Scriven, M. The methodology of evaluation. In B. O. Smith (Ed.), Perspectives of Curriculum evaluation. Chicago: Rand McNally & Company, 1967.
- Stake, R. E. The countenance of educational evaluation. Teachers College Record, 68, 523-540, 1967.
- Webb, E. J. et al. Unobtrusive measures. Chicago: Rand McNally & Company, 1966.